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Pulp & Paper

CIFIC INDUSTRY

FEBRUARY • 1961



MIKE'S MAKING *Sure* HIS PUMPS GET A DRINK!

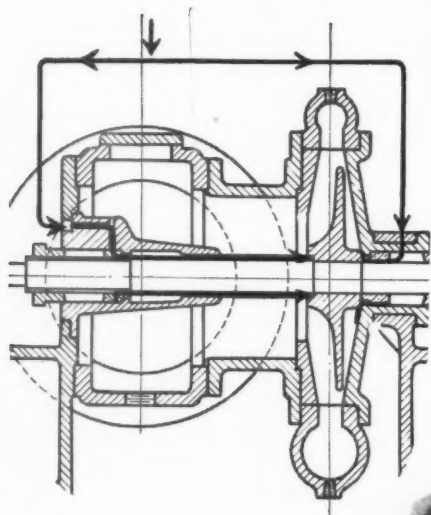
Mike has been around mills long enough to know what happens when pump packing boxes aren't flushed with clear, fresh water. He wants no part of the serious leakage, low efficiency, and air binding that lack of care can bring.

Flushing isn't much of a job either. In fact, with Miami pumps, it is a cinch because we've designed Miamis with a special water connection to make flushing both simple and effective. A twist of the handle and the job is done. (Water connection arrowed on tracing below).

Another Miami feature of particular importance is the adjustable impeller. When side plates wear, Miami's special design permits adjusting of clearance, thus bringing the pump back to high operating efficiency temporarily. And when you realize that new side plates can't be obtained quickly for any make pump, you realize how fortunate are mills with Miamis.

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MIDDLETOWN, OHIO
Division of the Black-Clawson Co.



● CLOSE-UP OF MIAMI PUMP
SHOWING WATER CONNECTION.
MAKES FLUSHING OF PACKING
BOX BOTH COMPLETE AND EASY

Miami Pumps



*The Journal of the
Pacific Coast Industry*

FEBRUARY • 1943

Vol. 17 — No. 2

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British Columbia Log Embargo to Be Modified

Export permits will be granted for export of around 5,000,000 feet per month of small hemlock and balsam fir logs, about 40% of 1940 exports and considerably lower percentage of 1941 and 1942 exports until embargo was applied last September—Resumption of exports is in accord with Joint Canada-United States War Production Policy.

● Puget Sound pulp mills, for months hungry for raw material, will be rationed a certain amount of hemlock and balsam logs from British Columbia this year unless production in the camps undergoes an unexpected breakdown such as to create acute shortage in the north.

Canada's pulpwood log export policy is to be modified in the spirit of the Hyde Park Agreement, and the general expectation is that British Columbia will be able to ship about 5,000,000 feet of logs to Puget Sound every month—perhaps more, depending on production.

Decision was reached by timber controller A. H. Williamson of Vancouver who, on his return to the west coast from Washington, made it his business to confer at length with every important division of the forest industries to learn their problems, emphasize the governments' need for more production and see how the Timber Control might be able to expedite operations.

By a series of moves taken by the Timber Control immediately before and during the visit of Mr. Williamson to Vancouver this month it is believed that a formula will be worked out to stimulate production, especially by the open-market loggers who in recent months have felt that they had little incentive to stay in business.

In explaining the international influence upon the new log export policy Mr. Williamson declared: "The Hyde Park Agreement basically provides on broad lines for equal access to raw materials in each country for purposes of equal urgency.

"Hence Canada depends on the United States for such things as steel, machine tools and various kinds of equipment, while the United States looks to Canada for nickel, aluminum, copper, lumber and so on.

"An examination of our position discloses that in 1943 we will be expected to export from British Columbia to Puget Sound a quantity

of hemlock logs for use in the manufacture of pulp. Such action is only reasonable and fair, despite the fact that all such logs are urgently needed in British Columbia to maintain production at existing rates."

Mr. Williamson stated that pulp mills in British Columbia had been operating at 80 per cent or more of total capacity while pulp mills in the Puget Sound area were averaging not much more than 60 per cent, if that. It would be the business of the Timber Control in Canada to assist in reducing that difference as much as possible so that, so far as raw material supply is concerned, the British Columbia mills will not be at an advantage over the American plants.

Whether such a program would severely handicap the British Columbia mills and force them to curtail production Mr. Williamson was not sure, but he was hopeful that increasing log production this year would make it possible for Washington mills to receive a fair amount of hemlock logs without the British Columbia mills being seriously affected.

This is a feeling shared by D. D. Rosenberry, assistant timber controller for British Columbia with head office in Vancouver. Mr. Rosenberry points out that weather conditions have caused a net loss of 75,000,000 to 100,000,000 feet of logs in British Columbia so far this year, but with favorable conditions prevailing from now on it may be possible to overcome this disadvantage.

Mr. Rosenberry hopes that some of the marginal log producers that found the going too tough last year because of ceiling prices and shut down their camps will get back into operation before long. Labor shortage is still critical and a good deal will depend on whether relief on that score is forthcoming.

Several inducements, apart from the higher prices prevailing in the United States, have been offered the open market loggers in British Columbia. In addition to the depletion

allowance on taxes previously announced, they will receive an additional \$1 per thousand feet on all logs except peelers. The loggers expect to receive about \$3 per thousand more on crown grant logs exported. In addition, they receive higher prices for peeler logs—\$4.50 per thousand on No. 1 and No. 2 grade. All these concessions became effective February 1.

The intention is to grant permits only for logs nineteen inches and under and to endeavor to grant such permits for logs that can best be spared from the Canadian market and on the most suitable possible basis.

Careful consideration, states Mr. Williamson, will have to be given as to when shipments will commence, having in mind the critical inventory conditions existing at present in British Columbia.

"It should be understood," added Mr. Williamson, "that while it is hoped that the policy laid down will remain unchanged throughout the year 1943, the Timber Control cannot be considered to have tied its hands if changes should appear necessary in the year which would assist in the war effort."

Joint Statement of War Production Policy

● The Hyde Park Agreement referred to by Mr. Williamson is the statement of War Production Policy for Canada and the United States which was released December 23, 1941, by President Roosevelt with the following comments: (This was printed in full on page 6 of the April, 1942, issue of **PACIFIC PULP & PAPER INDUSTRY**).

"The Joint War Production Committees of Canada and the United States have unanimously adopted a declaration of policy calling for a combined all-out war production effort and the removal of any barriers standing in the way of such combined effort. This declaration has met the approval of the Canadian War Cabinet. It has my full approval. To further its implementation, I have asked the affected departments and agencies in our Government to abide by its letter and spirit, so far as lies within our power. I have further requested Mr. Milo Perkins, the Chairman of the American Committee, to investigate, with the aid of the Tariff Commission and other interested agencies, the extent to which legislative changes will be necessary to give full effect to the declaration.

"Through brute force and enslavement, Hitler has secured a measure of integration and coordination of the productive resources of a large part of the continent of Europe. We must demonstrate that integration and coordination of the productive resources of the continent of America is possible through democratic processes to free consent."

The Joint Statement

"Having regard to the fact that Canada and the United States are engaged in a war with common enemies, the Joint War Production Committee of Canada and the United States recommends to the President of the United States and the Prime Minister of Canada the following statement of policy for the war production of the two countries:

"1. Victory will require the maximum war production in both countries in the shortest possible time; speed and volume of war output, rather than monetary cost, are the primary objectives.

"2. An all-out war production effort in both countries requires the maximum use of the labor, raw materials and facilities in each country.

"3. Achievement of maximum volume and speed of war output requires that the production and resources of both countries should be effectively integrated, and directed towards a common program of requirements for the total war effort.

"4. Each country should produce those articles in an integrated program of requirements which will result in maximum joint output of war goods in the minimum time.

"5. Scarce raw materials and goods which one country requires from the other in order to carry out the joint program of war production should be so allocated between the two countries that such materials and goods will make the maximum contribution toward the output of the most necessary articles in the shortest period of time.

"6. Legislative and administrative barriers, including tariffs, import duties, customs and other regulations or restrictions of any character which prohibit, prevent, delay or otherwise impeded the free flow of necessary munitions and war supplies between the two countries should be suspended or otherwise eliminated for the duration of the war.

"7. The two Governments should take all measures necessary for the fullest implementation of the foregoing principles.

"Members for Canada: G. K. Shiels, Chairman; R. P. Bell, H. J. Carmichael, J. R. Donald, W. L. Gordon, H. R. MacMillan.

"Members for the U. S.: Milo Perkins, Chairman; J. V. Forrestal, W. H. Harrison, R. P. Patterson, E. R. Stettinius, H. L. Vickery."

● Skeptics on both sides of the line take a wait and see attitude toward the announcement that some 5,000,000 feet of hemlock logs will be allowed to cross to the Puget Sound mills.

In the first place, they point out, there is no definite date for starting the exportation of logs to relieve the critical shortage. This indefiniteness of time is said to be due to the low inventory of hemlock logs in British Columbia. Exports must wait upon the building up of this inventory through increased production as the weather improves, probably two or three months.

Then, they emphasize, there is no figure announced which the hemlock inventory must reach before exports may begin. Nor has any statement been made public as to the methods of compiling the inventory, whether

certain logs may be earmarked for special purposes and excluded from the inventory.

Coast Men Attending New York TAPPI Meeting

● Several Pacific Coast executives and technicians headed eastward early this month to attend the annual national meeting of the Technical Association of the Pulp and Paper Industry.

Three Weyerhaeuser men—R. B. Wolf, manager of the Pulp Division; Ray S. Hatch, research director, and Edward P. Wood, technical director of the Longview Mill—W. F. Holzer, in charge of the pulping laboratory of the central technical department of Crown Zellerbach Corp., were planning to attend TAPPI meetings at the Hotel Commodore, February 15-18, and other events of Paper Week in New York City. Mr. Hatch was first to leave on February 5 as he planned calls in California en route. Mr. Holzer left the next day, and the others the following week.

Mr. Wolf, who won the award last year, was to present the TAPPI medal for outstanding contributions to the science of pulp and paper making to Henry E. Fletcher of the Fletcher Paper Co., Alpena, Mich., first president of TAPPI.

At the TAPPI sessions, Mr. Hatch will act as chairman of the viscosity subcommittee of the standard methods committee during a discussion of the questions of viscosity determination methods. He is author of treatise entitled "Rapid Method for Determination of Cellulose Viscosity," which was published in the October, 1942, issue of **Pacific Pulp & Paper Industry**.

Mr. Wood will be official delegate representing the Pacific section of TAPPI. He is the chairman of the Pacific section.

Glenn Crout Joins Quartermaster Corps

● Glenn Crout, shipping clerk for the Puget Sound Pulp & Timber Company, Bellingham, left February 4th to report for duty as a lieutenant with the Quartermaster Corps of the Army. He has been active in civic affair and last year served as ruler of the Bellingham Elks.

Fibreboard Has 433 Men In the Armed Services

● Fibreboard Products, Inc., plants in California, Oregon and Washington were represented in the armed services of the United States by 433 men.

They were spread all over the world, wherever the American flag flies over our troops. Letters from many of these Fibreboard men are published in the monthly house organs of the Fibreboard plants.

Art Zimmerman Recovering From Illness

● Arthur C. Zimmerman, vice-president and general manager of the Pacific Paper Board Company of Longview, Wash., has weathered a critical siege of illness, including pneumonia. Three weeks in bed ended with no regrets for him on February 4, but he was not going to be able to return to the plant until around mid-February.

Washington Legislature Considers Pollution Bill

MORE drastic than the pollution bill introduced in the Washington State legislature two years ago by the same proponents is Senate Bill No. 74, introduced on January 22nd and referred to the Committee on Fisheries. The sponsor was state senator Barney Jackson, Democrat, of Tacoma. The proposed act is printed in full in this issue.

In promoting the bill, the sponsors, including Rupert H. Bailey, president of the Pioneer Oyster Company and Alfred H. Lundin, of Seattle, attorney for the concern, emphasize a number of points. These two men took the affirmative side of a debate before the Industrial Committee of the Seattle Chamber of Commerce on February 2nd, while U. M. Dickey, president and Harry B. Jones, attorney for the Soundview Pulp Company, took the negative. Later the committee reported it opposed the bill as economically unsound.

The Pioneer Oyster Company was the plaintiff in a suit for \$1,780,000 damages against the Puget Sound Pulp & Timber Company of Bellingham in Federal Court in Seattle in 1941. The trial lasted from June until September and United States District Judge John C. Bowen rendered his decision in favor of the defendant pulp company on September 29, 1941. In his decision Judge Bowen found that the evidence had shown waste liquor from the Bellingham mill could not, by reason of the tides and currents enter Padilla Bay, and, that the evidence further showed the reason the oysters in Padilla Bay had not thrived was that they were too thickly planted. (See pages 5 to 9, October, 1941, issue.)

At the Industrial Committee meeting Mr. Lundin stated that the Olympia oyster spat had not set for three years and that the oyster growers believe this failure is due to pulp mill liquor. Mr. Lundin made this statement in connection with his point that the oyster and fish people believe that pulp mill liquor damages fish and shellfish.

Before proceeding with Mr. Lundin's remarks it should be pointed out that no pulp mill liquor is discharged into the waters of Puget Sound adjacent to the oyster beds at Olympia. The Rayonier Incorporated mill at Shelton is the near-

Proposed by oyster growers who lost suit against Puget Sound Pulp & Timber Co., bill would tax all pulp \$5 per ton, resulting fund to be loaned back to the mills after the war for construction of byproduct plants—Other bills may be introduced.

est plant and its waste liquor is either converted into Raylig, a road binder, or pumped to settling basins in the hills back of Shelton. None is discharged into the waters of Oakland Bay where the mill is located.

Mr. Lundin said he understood the profits of the pulp mills in Washington were around \$30,000,000 for 1942 and hence the tax of \$5 per ton would come out of the excess profits tax and not out of the net income. Inasmuch as this bill is a controversial one he asked the Industrial Committee not to take any action.

Harry B. Jones of Seattle, attorney for the Soundview Pulp Company, stated that the tax would in normal times raise a fund of from 7½ to 10 million dollars per year or 25 to 33 1/3 per cent of the industry's gross profits. He said that the bill was based upon several assumptions, one being that the industry polluted the waters of the state which had not been proved. Those who consider themselves damaged by pulp mill liquors have recourse to the courts. He cited the suit mentioned above.

A second assumption is that disposal plants can be built on an industry wide basis. This is not true he said as no solution has as yet been found for the problem of utilizing waste liquor on an industry basis although the industry has spent large sums of money to develop a practical method.

A third assumption, said Mr. Jones, is that this proposed fund can be built up at the expense of the Federal Treasury with the mills paying two million and the Treasury losing eight million dollars out of a total of ten million raised by taxes. This argument is fallacious as only normal taxes are allowed and not special assessments and this tax would fall into the latter class, in his opinion. It would therefore be disallowed as a tax deduction and would have to come out of net profits.

The rehabilitation clause proposes to take money from mills to help a certain company in the fish or shell-

fish business. He pointed out that the state constitution forbids the state lending its credit to aid private industry, so the bill would be unconstitutional.

If the act were passed declared Mr. Jones, there would be a scramble to get the first money. The fund would be exhausted in short order and the mills would actually be paying each other on a monthly basis for building the recovery plants without any assurance that they would successfully recover the waste liquor.

The pulp industry is subject, in peace time, to foreign competition and this bill would give foreign producers subsidy of \$5 per ton making it still harder for the industry in Washington to compete with low cost operations in other countries.

Letters were read from M. B. Houston, vice president of Rayonier Incorporated and Robert H. Evans, attorney for Puget Sound Pulp & Timber Company, opposing the bill. Mr. Evans emphasized that the proper place for any damaged persons to seek redress was in the courts and that if the Pioneer Oyster Company felt Judge Bowen's decision was wrong why didn't it appeal?

Rupert H. Bailey, president of the Pioneer Oyster Company, criticized the courts in Washington in connection with pollution cases. He said that the question of waste liquor polluting the waters was not a controversial one, that it had been proved. He stated that three government scientists had written statements to the effect that dilutions of waste sulphite liquor as high of 1 part in 100,000 have been known warm water fish. He quoted the State Pollution Commission's report saying liquor injured fish, and he emphasized the part in the report dealing with pollution in Grays Harbor. He said that fishermen have testified that in Grays Harbor half of the salmon going to the canneries were dead.

Mr. Bailey referred to the paper given by William Pittam of the Pulp

Senate Bill No. 74
In the Senate
By Senator Jackson
State of Washington, Twenty-Eighth Regular
Session

January 22, 1943, read first and second time, ordered printed,
and referred to Committee on Fisheries.

AN ACT

Imposing and providing for the collection, enforcement and administration of a tax upon the exercise of the privilege of disposing pulp effluent in the waters of the State of Washington or waters contiguous to the State, and providing for the establishment of a Board to direct disposal of funds so collected to correct the pollution of the waters and re-establish fish and shell fish injured or destroyed by pulp pollution. Be it enacted by the Legislature of the State of Washington:

Section 1. The term "person" as used in this Act shall be construed to mean any person, firm, co-partnership, association, joint adventure or corporation, however organized.

Sec. 2. Upon every person now engaged in or continuing to, or who may hereafter engage in, or continue to engage in the business of manufacturing pulp and disposing of its waste liquor or effluents in the waters of the State of Washington, a tax is hereby imposed equal to the sum of five dollars (\$5) per ton of pulp produced in the State of Washington, whether sold as pulp or manufactured into other products. Liability for this tax shall attach at the time and place of production, but such tax shall not be deemed to be due and payable until immediately before removal from the place of production, or immediately before the beginning of removal from the State.

Sec. 3. Within thirty (30) days after the closing of each quarterly period after this Act becomes effective as prescribed by law, every person engaged in the occupation or occupations defined by the provisions of this Act and discharging its waste liquor into the water of or contiguous to the State of Washington, shall file a quarterly report, under oath, covering such period, with the State Tax Commission of Washington, in accordance with the rules and regulations and upon such forms as may be prescribed by the State Tax Commission, said quarterly report to be accompanied by a remittance of the full amount due thereunder, which amount shall be made payable to the State Treasurer.

Any taxpayer who shall fail or refuse to file such quarterly report and pay such tax within the time and in the manner above prescribed, shall be deemed delinquent and a penalty of ten per cent (10%) shall be added to the amount of the tax actually due for such period: Provided, However, That the State Tax Commission may, in its discretion, grant an extension of time, not to exceed thirty (30) days, within which the tax for any quarterly period may be reported and paid without the addition of the ten per cent (10%) penalty.

Sec. 4. All books, way-bills, inventories, correspondence and memorandum relating to or used in transaction of the business of any person owning or operating such pulp mills and disposing of its waste liquor in the waters of or contiguous to the State of Washington, shall, on demand of the State Tax Commission, or its duly authorized representative, be open to inspection and examination. If anyone having charge, control or possession of such papers and books of such person shall neglect or refuse on demand of the State Tax Commission, or its authorized representatives, access to the papers and books aforesaid, he or they shall be deemed guilty of a gross misdemeanor and upon conviction thereof, shall be punished therefor as provided by law.

Sec. 5. If any person subject to this Act shall fail to make the reports provided in Section 3 of this Act, at the time or in the manner provided, the State Tax Commission shall, in such case, upon such information as it may possess or obtain, ascertain the kind and amount of the product produced together with the value thereof, and shall thereupon find and determine the amount of tax due from such person, and there shall be added thereto a penalty for failure to report, which penalty shall equal ten per cent (10%) of the tax imposed and shall be treated as a part thereof.

Sec. 6. Findings and determinations of the State Tax Commission as to the amount of taxes due under the provisions of this Act shall be in all courts for all purposes prima facie evidence of the facts therein stated.

Sec. 7. If any tax, increase or penalty imposed by this Act, or any portion of such tax, increase or penalty is not paid within fifteen days after the same shall become due, the tax commission shall issue a warrant under its official seal directed to the sheriff of any county of the state, commanding him to levy upon and sell the real or personal property of the taxpayer found within his county, or so much thereof as may be necessary, for the payment of the amount of such warrant, together with interest thereon at the rate of one per cent (1%) of the amount of such warrant for each thirty days or portion thereof after the date of such warrant, plus the cost of executing said warrant, and return such warrant to the tax commission and pay to it the money collected by virtue thereof within sixty days after the receipt of such warrant.

The sheriff, within thirty (30) days after the receipt of said warrant, shall file with the clerk of the superior court of his county a copy thereof, and thereupon the clerk shall enter in the judgment docket, the name of the taxpayer mentioned in the warrant and in appropriate columns the amount of the tax or portion thereof and any increases and penalties for which the warrant is issued and the date when such copy is filed, and thereupon the amount of such warrant so docketed shall become a lien upon the title to and interest in real and personal property of the taxpayer against whom it is issued and shall be the same as a judgment in a civil case duly docketed in the office of such clerk, and the sheriff shall thereupon proceed upon the same in all respects and with like effect as prescribed by law with respect to executions or other process issued against rights or property upon judgments of said superior court. The sheriff shall be entitled to fees as provided by law for his service in levying execution on a superior court judgment and the clerk shall be entitled to a filing fee of one (\$1) dollar, which shall be added to the amount of such warrant. The proceeds received from any sale shall be credited upon the amount due under the warrant and when the final amount due is received, together with interest, penalties and costs, the judgment docket shall show the claim for taxes to be satisfied and the clerk of the court shall so note upon the docket any surplus received from any sale of property shall be paid to the taxpayer. If the return on the warrant shall show that the same has not been satisfied in full, the amount of the deficiency shall remain the same as a judgment against the taxpayer which may be collected in the same manner as the original amount of such warrant.

In the discretion of the tax commission, a warrant of like terms, force and effect may be issued and directed to any agent of the commission authorized to collect taxes under this Act, and the execution thereof such agent shall have all the powers conferred by law upon sheriffs, but shall not be entitled to any fee or compensation in excess of the actual expenses paid in the performance of such duty, which shall be added to the amount of such warrant. Provided Further, That the payment of the tax levied by this Act shall be a condition precedent to the engaging or continuing to engage in the production of pulp in this State where pulp waste and effluent is disposed in the waters of the State, or in the waters contiguous to the State, and default in the payment of the taxes as herein provided, shall constitute cause for injunction in any court of competent jurisdiction upon the application of the State Tax Commission in the name of the State of Washington for an order restraining and enjoining a delinquent taxpayer from engaging or continuing to engage in such occupations or business within this State.

Sec. 8. All taxes imposed and collected under the foregoing provisions of this Act shall be paid into the State Treasury into a special fund known as the Pulp Pollution Fund.

Sec. 9. Any person who willfully obstructs or hinders the State Tax Commission, or other public officer or employee from collecting the tax, or who makes a false or fraudulent report or return, with the intent to defraud the State, or to evade the payment of the tax, or any part thereof, or who willfully refuses to make or file any report or return as required by the terms of this Act, or who aids or abets another in any of the foregoing prohibited acts, shall be guilty of a gross misdemeanor, and on conviction thereof shall be punished as provided by law.

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Sec. 10. Any taxpayer who is required by the State Tax Commission to pay a tax which he deems improper or unlawful in amount, may pay said tax under protest and may recover the same with interest, provided action is commenced within thirty (30) days after such payment, against the State Tax Commission in any court of competent jurisdiction. Any judgment so obtained against the State Tax Commission shall be paid out of the said Pulp Pollution Fund upon a voucher duly approved by the State Tax Commission. Any remedy herein provided for shall be exclusive of all other remedies and no injunction to restrain or delay the collection of any tax claimed to be due shall be issued by any court of this State.

Sec. 11. There is hereby created a Commission to be known as Washington State Pulp Pollution Board, consisting of five members: The Governor of the State of Washington, the Director of Fisheries, the Director of the Department of Health, the Director of Game, and the Director of Conservation and Development of the State. Said Board shall have exclusive power and is hereby directed in accordance with the rules and regulations as the Board shall adopt, to loan to any person operating a pulp mill within the State and disposing its waste liquor or effluents into the waters of or contiguous to this State, sums of money from said Pulp Pollution Fund to be used for the erection of such facilities as the Board may deem necessary to prevent the further pollution of said waters; that said loans may be made for such terms and conditions as the Board shall deem reasonable, not to exceed twenty-five (25) years, with interest at the rate of one per cent (1%) per annum, and take notes payable to the State of Washington therefor, and the Board shall employ the service of such persons as may be required to carry out the purpose of this Act, and all such expenses shall be paid out of the said Pulp Pollution Fund. Said

Board shall have authority under such rules and regulations as it shall adopt, to loan not more than five per cent (5%) of the money paid into the said Pollution Fund, to such persons as have been engaged in shell fish production business in this State, and whose beds or shell fish have been injured or destroyed by pulp pollution, on such terms and conditions as the Board shall determine. Such loans shall be made at the rate of one per cent (1%) per annum for a period of ten (10) years, and in the event any loan made as herein provided is not paid in accordance with the terms of the loan, then the Pulp Pollution Board shall have the right to institute an action in the name of the State of Washington against the person liable on said loan.

Sec. 12. There is authorized to be appropriated from the said Pulp Pollution Fund, an amount equal to five per cent (5%) of said fund to the Fisheries Fund of this State to be used in the investigation, propagation, protection and rehabilitation of fish and shell fish.

Sec. 13. In the event any person operating a pulp mill disposing of its pulp effluents into the waters of this State, installs an evaporation or other by-products plant, or any other method, which, in the judgment of the Board, successfully eliminates the pollution from the waters of the State, he shall not hereafter be required to pay the tax required by this Act.

Sec. 14. Should the court declare any section of this Act unconstitutional or unauthorized or in conflict with any other section or provision of this Act, then such decisions shall effect only the section or provision declared to be unconstitutional or unauthorized, and shall not affect any other Act or part of this Act.

Division Weyerhaeuser Timber Company research laboratory before the Oregon Section of the American Chemical Society on March 14, 1942, "Sulfite Waste Liquor Disposal," and which was published in the April, 1942, issue of PACIFIC PULP & PAPER INDUSTRY.

He employed Mr. Pittam's statement that in this experimental work a commercial size digester was used for cooking to prove that the process was a commercial one and beyond the experimental stage. He also extracted some of the points in Mr. Pittam's conclusions to the effect that the process will pay for itself and that most of the chemicals will be recovered.

Mr. Bailey chose to omit Mr. Pittam's statements that the experimental steam generation and chemical recovery was performed on a pilot plant scale. This is the heart of the system. Mr. Pittam said:

"The only scheme that promises successful disposal is that of burning the liquor to recover heat. This has been done, but, in a region of low cost fuel, such as the Pacific Northwest, is not economically feasible. If a process of combustion was developed, where not only the heat of burning was used, but also the chemicals, used in the original liquor and present in the spent liquor as ligno-sulfonates, were recovered for reuse, then the economics would be favorable and the process would be self supporting. Such a disposal process has been developed recently on a pilot plant scale at the Long-

view mill of the Pulp Division Weyerhaeuser Timber Company. It consists of evaporation and combustion of the waste material, producing power and process steam, and regenerating the chemicals present in the original cooking liquor for recycling."

It should be noted that Mr. Pittam said, "developed recently on a pilot plant scale."

Mr. U. M. Dickey, president of the Soundview Pulp Company concluded the discussion by stating what the tax would do to his own mill. With a production of around 200,000 tons per year, said Mr. Dickey, the tax would be \$1,000,000. For 1942 Soundview's earnings were \$1,300,000 of which \$200,000 is a post war credit. After deducting the \$1,000,000 tax the company would have \$100,000 left for dividends and improvements.

He considers the Soundview mill an economical operation, Mr. Dickey stated, but during the years it faced stiff foreign competition it didn't make \$2 per ton. With a \$5 per ton tax it is easy to see that competition would be impossible. If the bill were passed, said Mr. Dickey, he is firmly of the opinion that it would close most of the mills in Washington.

As to the Weyerhaeuser recovery process urged by Mr. Bailey, Mr. Dickey said there was a difference of opinion among technical men about it and that it was still in the experimental stage. To put it in at

Soundview would cost around \$4,000,000, he said.

Committee Hearing

● On February fourth the fisheries committees of the house and senate held a joint hearing in Olympia. Both sides presented short talks. Lee Makovich, general manager of the Fishermen's Packing Corporation of Anacortes, Washington, said the bill was too drastic, and that although he favored the purpose of the bill he believed it would "tax the pulp industry out of business."

Points Made by the Bill's Advocates

● In advocating Senate Bill No. 74, the proponents emphasize fourteen statements which are given here together with answers:

No. 1: "Pollution is a major problem in the State of Washington."

This remains to be proved. As far as pollution by pulp liquor is concerned the industry denies it and the latest court decision found there was no pollution by pulp liquor in Padilla Bay on Puget Sound, the area in which it had been alleged pollution was serious. Pulp mill pollution is not a problem unless a mill is so located that the waters surrounding it are confined and the discharge of the mill is held to a particular watercourse or bay. Almost all of the mills in Washington are located upon open waters where the tide action freely removes the discharge from the plants and in these cases no problem of pollution is presented. State investigations have pointed out the evil, if any, in pulp mill pollution, and it is that the discharge of the mills reduces the oxygen content of the water in the immediate vicinity of the discharge

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pipes. This may result in depriving fish in the immediate vicinity of sufficient oxygen, but aside from this one ill effect, which is limited to confined waters, no damage or injury results from pulp mill pollution. The discharge is not otherwise poisonous or harmful to marine life.

The bill takes into account no other causes of pollution, such as municipal and other industrial uses made of the waters of the state. To single out the mills is discriminatory and entirely ignores the fact that neither public nor private research, nor private litigation has established the damaging effect of the discharged liquor.

No. 2: "Methods have now been perfected for the salvage of pulp mill wastes and the manufacture therefrom of by-products."

This is not true. It has already been pointed out that the Weyerhaeuser method for recovering the chemicals is still in the pilot plant stage and has not been developed commercially. As Mr. Pittam of Weyerhaeuser said, the mere burning of the waste liquor as fuel is not economic in a low cost fuel area such as the Pacific Northwest. It would represent a tax per ton of finished product. Further, it is not feasible today because of the equipment required for evaporation of the liquor to a consistency which will burn.

The program for utilization of waste sulphite liquor at the Marathon Paper Mills, Kaukauna, Wisconsin, is not a solution for the entire industry because of the limited market for the by-products, and some waste is still discharged in a modified form.

In European countries some sulphite mills convert waste liquor to alcohol for motor fuel and other purposes. This process is as yet economic only where grain and molasses are scarce. Even under the present tremendous war time demands for alcohol for munitions and synthetic rubber, the sulphite mills that have offered to produce alcohol have been turned down because other sources were believed cheaper and adequate and the mill alcohol plants would require scarce materials.

Although the sulphite industry all over the world has conducted research on waste liquor disposal and utilization for many years, no universally applicable process has as yet been developed commercially.

No. 3: "Construction of by-product plants must await the release of the necessary materials, probably until after the war."

It is obviously true that the WPB would not allocate scarce materials for the construction of by-product plants that would produce materials of no presently known help in winning the war. As already pointed out the by-products developed to date cannot be marketed in unlimited quantities. If the entire sulphite industry were to try to make them there would be such an oversupply in a few days that the plants would have to shut down and resume discharging waste liquor as at present. Research has not yet solved the extraction of such by-products from waste sulphite liquor as could be produced by the entire industry.

No. 4: "The pulp mills would then face the problem of financing such construction."

If and when a practicable and economically feasible method of disposal and/or utilization of waste liquor is developed, the pulp mills will be able to finance themselves. If the projects would not be good risks for private financing they would not be good risks for the state. Any construction proposed through this system of taxation would have to be a sound business venture or it would wreck itself and ruin the economically sound pulp mills.

The right to obtain funds for building such plants from the state is denied by the constitution of the State of Washington which provides: "The credit of the state shall not, in any manner be given or loaned to, or in aid of, any individual, association, company or corporation." It further provides: "No moneys shall ever be paid out of the treasury of this state, or any of its funds, or any of the funds under its management, except in pursuance of an appropriation by law."

No. 5: "Of \$30,000,000 gross profits of Washington pulp mills during 1942, fully \$24,000,000 will go to income and excess profits taxes."

It cannot be determined as yet whether the profits approached this sum for all 1942 statements are not yet available. The statement implies that the Federal Treasury will stand most of the proposed \$5 per ton tax, and this is held questionable by experienced tax attorneys. They say that since the theory and purpose of this bill is to create a fund for the future use and benefit of the contributors, it is a species of assessment for benefits which are not recognized as deductions for purposes of Federal taxation. It is analogous to local improvement districts where contributions are assessed against those specially benefited which are customarily held not deductible as taxes or business expenses. In view of the amount involved, it is not at all likely that the Commissioner of Internal Revenue would recognize this as a general tax or deductible expense.

The statement about 1942 profits is beside the point as the law would apply to 1943 production and profits in the current year will be greatly reduced for most of the straight pulp mills are running at little better than half of capacity, two are shut down, and costs are rising. This proposed tax may well be the difference between profit and loss in 1943. There has been no rise in pulp prices since July, 1940, and they are now controlled by government order and any increase is unlikely.

It is important to point out again that the \$5 per ton tax will be a subsidy after the war to European and Canadian producers who are not faced with such taxes.

No. 6: "The pulp mills would be left in comparatively poor financial position after the war to undertake the financing of the by-product plants necessary to eliminate pollution."

In one of their points the proponents of the bill say the mills are making so much money that most of the tax would come out of their excess profits taxes, and here they say the mills will be in poor financial shape after the war. This admits the obvious, that the industry will make far less money from now on. If the industry will be badly off without the \$5 per ton tax it is also obvious they will

be much worse off if this sum is taken away from them.

Again emphasis should be placed upon the fact that if and when sound by-product or disposal plants can be built the industry itself will be able to finance their construction without resorting to funds as urged be set up by this bill.

No. 7: "This bill provides for the setting up of a reserve out of the high gross profits of the pulp mills for use in post war construction of by-product plants."

This point has been covered in answers to No. 5 and No. 6.

No. 8: "This reserve fund would be created by a levy of a \$5 tax per ton of pulp produced so long as the pulp mill dumps its waste into state waters."

This fails to accomplish the avowed purpose of the bill to prevent pollution. If the tax is paid the waste can be dumped indefinitely into state waters.

This raises the point as to the definition of "waste." No system could be devised that would entirely eliminate waste water passing through the mill into fresh or salt waters, for each ton of pulp produced requires from 50 to 100 thousand gallons of water. The maximum that could be done would be to try and eliminate the chemicals from the waste.

But this change in the form of the waste would not necessarily change the idea of the proponents of the bill or the administrators of the act as to effect on marine life. If oysters continue to die from other causes, the discharge of this effluent, though harmless, will probably still be blamed.

Another thought. Suppose the by-products plants were built but could not operate due to a glutting of the market for their products, the waste would have to be dumped and the tax per ton of pulp paid.

No. 9: "The tax would automatically be cancelled as soon as the by-product plant thus financed goes into operation and eliminates the dumping of wastes into state waters."

According to the bill, funds would be loaned for construction of facilities which, in the judgment of the board, would prevent pollution. Therefore, the basis of judgment upon which a loan is made would necessarily establish that the facilities would prevent pollution and therefore relieve the plant from further payment of the tax regardless of whether or not in actual practice it would work out successfully. Thus, as fast as applicants could get loans for an approved facility, it will be able to cut off further taxes, while those who were too late to get in on the distribution of funds would be left holding the sack and would have to continue to pay.

If the board finds no disposal facility will be adequate, it may keep the plants paying the tax indefinitely, regardless of the premise underlying the bill that a feasible disposal method exists. All sorts of difficulties will arise as to who will determine if there is pollution, and if so, the degree thereof. The first company obtaining a loan from the fund might have an economic operation, where the remaining companies might have to go on paying the \$5 per ton tax indefinitely. Such a by-product plant might also be faced with the fact that in making this by-product it has eliminated only part of the waste, but is still obliged to let part of the waste go into the waters of the state. In such a case it would, under this bill, have to pay the full tax.

No. 10: "This fund, under control of the state, would be loaned to the pulp mills for long terms at low interest rate for the construction of necessary by-product plants after the war."

As has been stated, this proposed use and application of the tax is unconstitutional.

No. 11: "Rehabilitation of the oyster industry would be accomplished by providing that 5 per cent of the said fund may be loaned to oyster growers whose beds have been injured by pulp pollution."

The oyster industry in Washington did fairly well in 1942. The fresh oyster market was attractive because of the absence of ceiling prices which had been applied to canned oysters. A shortage of cans and of labor also held down canning last year. Labor could not be hired in sufficient amount at wages permitting the packers a profit under established ceilings. The two locations where rehabilitation may be needed is in the Pioneer Oyster Company's bed in Padilla Bay and in the Olympia oyster growing region in southern Puget Sound. In the first place the Federal Court decided the trouble was not sulphite waste liquor but too thick planting. The trouble with the Olympia oysters in that it is reported the spat has failed to set for three seasons, is not known, but waste sulphite liquor cannot be the cause for none is being discharged into waters anywhere near the beds.

There is no reason why the pulp industry should set aside 25 cents per ton of production to support the oyster industry. Furthermore, only a small proportion of the pulp mills are located near oyster beds. There is no justice in taxing the entire pulp industry because of a condition which cannot possibly be attributable to the majority of them. If oyster growers have a legal right to recovery, if in fact they have been damaged by the pulp mills, this should be sufficient without special legislative assistance.

No. 12: "This bill should have the support of the pulp mills, as they would temporarily contribute only 20 per cent of their net profits to create a fund ample to solve their pollution problem in this state for all time to come."

There is no more certainty of future profits than there is of a successful means of utilization of waste liquors, and any levy so collected and administered would cost the mills 100 per cent and not some lesser part thereof. Nor is there any basis for a levy being considered "temporary."

No. 13: "The fund so created would provide for a very necessary and desirable post war construction and payrolls."

It would appear much more important to preserve the payrolls of the present pulp mills than to jeopardize them for an uncertain expenditure at an indefinite time in the future, in the construction of plants which now merely exist in the imagination of the proponents of the bill.

No. 14: "Initial development would provide for the use of wastes as fuel, but the ultimate development will bring about the production of thousands of tons of cheap plastics from these wastes, with large increases in both the payrolls and the profits of the pulp mills."

Successful, cheap plastics from waste sulphite liquor cannot be produced by legislative fiat. This is a theoretical prediction not backed by practical experience to date. If and when such advan-

tages can be established the mills themselves will be the first to embrace them.

The fact that there is no known process for utilizing the waste for fuel on an economic basis at the present time, nor is there a single plant in operation in the entire industry which justifies the assumption that the waste can be economically utilized on an industry-wide basis either by power or other by-products.

The pulp mills have spent large amounts of money endeavoring to develop such processes. Their own interests will induce them to continue their search for the development of such processes, and if left alone they will continue to give employment to many men and women in industries as at present. If not, they will be unable to compete with foreign producers and the market will be taken over after the war by European and Canadian producers whose costs have always been lower, with nothing accruing to this state except unemployment and distribution of what is at present a flourishing industry.

As this is written no action has been taken by the State Senate. It is considered possible that the bill may be rewritten in such a way as to stand a chance of passing the Washington legislature, still stringent enough to seriously damage the pulp industry which is devoting a very large part of its production to war materials.

Galen Back After Successful Eye Operation

• Congratulations are pouring in on D. J. Galen, secretary of Crown Zellerbach Corp., San Francisco, who has just returned to his desk after a highly successful eye operation.

Mr. Galen's sight had been failing for some time and an operation was decreed the only possible restorative. Many friends in the industry will be glad to learn that his vision has been restored to apparent normalcy, after a trying ordeal which confined him to hospital and home for several weeks.

The delicate operation was performed by Dr. Samuel Engel, renowned eye specialist of San Francisco.

More Camas Men Join the Colors

• Crown Willamette Paper Company Division of Crown Zellerbach Corp., employs at Camas recently granted leaves of absence to enter armed services include William Gilbert, Roy Wohlsein, Louis Pierson, Henry Ostenson, Thomas Hughes, Robley Butler and Elvin Aslin.

"Fanny Parker" a Folding Seat of Paperboard

• It's too bad that these portable seats aren't being made for sale as they would come in handy nowadays during these long waits the public has to put up with at the ration boards, OPA and WPB offices, restaurants, bus stops and at the liquor stores (if you live in a state that rations it).

A few "Fanny Parkers" were made early in January by the Western Container Company, Seattle and Portland, for distribution at the annual convention of the Northwest Cannery Association in Portland. They made a big hit with the tired delegates.

Permission to make the seats was granted to Western Container by Glenn

Mather, formerly of the Marketing Service Corporation of Baltimore, who has a patent pending on the "Fanny Parker." Mr. Mather is now on leave of absence from the company and is serving as chief, Paper and Paper Products Section, Regional Office, OPA, New York City.

Western Container's "Fanny Parkers" were made of 30 and 16-point corrugated kraft board, the same quality and construction the company uses in manufacturing its heavy duty canners' cases.



The "Fanny Parker" folds up for easy carrying (top) but can be assembled in a jiffy (center and bottom pictures).

The statement reads, "Fanny Parker provides a portable parking place for people who go places. Rest more frequently and enjoy the whole day."

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Ed Tidland to Manage Pacific Coast Supply Co.

As John M. Fulton leaves for active duty with the Navy as Lieutenant, Aviation Administrative.

● Ed Tidland, assistant for several years to John M. Fulton, manager for the Pacific Coast Supply Company, succeeded to that position when Mr. Fulton left January 30th to report for duty with the Navy. Mr. Fulton was ordered to Dartmouth College, Hanover, N. H., for indoctrination training as a lieutenant, senior grade, in the Aviation Administrative Branch of the Navy.

Mr. Tidland's headquarters will be in 1116 Public Service Building, 920 Southwest 6th St., Portland, Ore., as were those of Mr. Fulton. Mr. Tidland is well known in the pulp and paper mills of the entire West Coast region and has had more than 30 years of experience in the paper industry, including six years in the Portland office of the Pacific Coast Supply Company. He is married, has one son who is a first class seaman in the U. S. Coast Guard, a daughter in Washington State College and a son in high school.

Mr. Fulton has been with the Pacific Coast Supply Company for more than fifteen years and for the past two and one half years he was manager of the company in Portland. Prior to that he served as regional manager in California. He is on leave of absence from the company for the duration of the war.

His wife, Mrs. Claire Fulton, has

moved temporarily to San Mateo, Calif., and hopes it may be possible to join her husband later when he is given his permanent assignment.

Mr. Fulton was born in Reno, Nev., and was graduated from the University of Nevada in 1925. Among Mr. Fulton's interests is photography and his many friends know him as an amateur of considerable ability.

No Slicing Order Will Cut Wax Paper Usage

● The recent OPA order stopping bakers from slicing bread will cut about in half the volume of waxed paper which had been used on that portion of the bread output, according to Pacific Coast producers of waxed paper. These informants said two thicknesses of waxed paper had been used generally on all sliced bread, and now this bread, unsliced, would require only one covering.

Sharing prominent space with the battles of Stalingrad and Rostov and Guadalcanal in some sections of the daily press, a great to-do had been made over the OPA order and for a while it assumed proportions of a momentous issue. One editorialist went so far as to picture wives in great distress because they had no bread knives at home. It apparently never occurred to him that even a dull meat knife would do the job.

Officials in the waxed paper production business said all this was "a tempest in a teapot," of the same vein as some of the "spoiled child" moans over coffee and sugar rationing. They said that unquestionably the OPA order would stick. However, they pointed out, the saving in

waxed paper was not the important aim. The real reason for the order, they said, was that many bakers were wearing out their slicing equipment and seeking replacements. In order not to have to furnish them new equipment, the OPA cut out all use of such equipment.

It has been reported that the knives in the slicing machines consumed about 100 tons of alloy steel annually.

Camas Doctors Ask Increase in Monthly Rates

● The cost of medical service in Camas is due for a rise when the present contract with the employees of the Crown Willamette Paper Company, Division of Crown Zellerbach Corporation, expires on February 28th.

Medical committees of the two unions and the management are now considering three proposals by the Camas Medical Service which now has the employees contract. The officials of the medical service pointed out that an increase in rates was justifiable because of increased costs during the past year.

Other reasons for the increase were given as a 50 per cent gain in hospitalization, a turnover in labor which has stepped up physical examinations about 200 per cent, and the rising cost of some drugs.

The Camas Medical Service has submitted three proposals for consideration by the employees, members of the Paper Makers and the Pulp & Sulphite locals. These are:

(1) Two dollars and fifty cents a month to each member, this to be the only charge, otherwise the contract will be the same as the one now in effect.

(2) Two dollars and twenty-five cents a month to each member, but the patient is to furnish his own medication.

(3) Two dollars a month to each member, but the patient is to pay the first doctor call and for whatever medicine is prescribed at that time.

The present contract calling for a \$2 monthly fee to employees expires Feb. 28, 1943. This provides members with medical and surgical services, hospitalization and medicine. (It is not compulsory that members take advantage of the medical service, but a large percentage of all employees do.)

Union members will sometime this month accept one of the three proposals submitted by the Camas Medical Service or submit a counter proposal.

Earl Thompson Transferred To West Virginia

● First Lieutenant Earl G. Thompson, Chemical Warfare Service, who was called to active duty in March, 1942, was transferred in January from Huntsville Arsenal, Alabama, to Marshall Plant, Chemical Warfare Service, New Martinsville, West Virginia. Mrs. Thompson accompanied him to the new post.

Lieutenant Thompson was Northwest manager of the Great Western Division, The Dow Chemical Company, Seattle, at the time he was called to active duty.



JOHN M. FULTON
Commissioned in the Navy



ED TIDLAND, Manager,
Pacific Coast Supply Co.

Pulp Mills Aiding War By Cutting Aircraft Cants

● In addition to producing essential pulps and papers and to operating their machine shops on war work, a number of Pacific Northwest mills are aiding the war effort in still another way. They are watching every hemlock log that comes into the break down plant and when cants of aircraft quality are found they are shunted to one side for transfer to plants specializing in the sawing of this critical lumber.

This service hasn't been generally known. Publicity has spotlighted the lumber industry's efforts to increase production of special lumber for such war needs as aircraft and ship decking, but the work of some of the pulp mill break down plants has remained unnoticed.

F. H. Brundage of Portland, western log and lumber administrator for the War Production Board, who is charged with responsibility for getting out critical lumber of all kinds, drew attention to the work of the pulp mill break down plants by praising those that are cooperating in an endeavor to increase to the maximum the volume of hemlock for aircraft purposes.

In talking with one of the editors of **PACIFIC PULP & PAPER INDUSTRY**, Mr. Brundage suggested that wherever possible, other pulp mills join in the recovery of aircraft quality hemlock from logs that turn out to be of better quality when sawn than had been anticipated. He pointed out that these cants may be handled at small expense by setting up a short conveyor to take the cants out of the mill for later shipment to remanufacturers.

He cited two different examples of equipment installation, one at the Puget Sound Pulp & Timber Company's unbleached sulphite pulp mill at Bellingham, and the other at the Columbia River Paper Mills at Vancouver, Washington.

At Bellingham is an example of a simple conveyor set-up to carry aero grade lumber out of the pulp mill while at Vancouver, a more expensive and complicated installation has been made. But these are permanent plant improvements which, after the war, will continue to enable that mill to get a higher percentage of recovery of good lumber from its logs.

At Vancouver there is a sawmill for production of lumber and a smaller splitter mill which in the past has cut up all the pulp logs.

F. H. Brundage, WPB Western Log and Lumber Administrator, praises mills for contributing to maximum utilization of hemlock logs for war uses by segregating cants of aircraft quality in cut up plants—Urges more mills to adopt this practice.

Pulp logs were selected on sight as they lay in the water; a difficult method at best, which inevitably resulted in a certain amount of error. Many No. 1 or No. 2 logs, having one or two good sides suitable for aircraft, went to the pulp mill.

Now practically all logs are being sent to the sawmill. Here the sawyer gets a better view of each log. He can take off a thin slab before making a decision. He sees all sides of the log. He salvages all the aircraft quality he can get out of low grade logs. When the wood goes through the head rig and the edger and comes off the edger table, the aero cants are saved. In order that the selection could be made in the sawmill, and not while the log was in the water, equipment had to be installed to carry pulp wood from the edger table to the pulp mill.

The company also installed two Stetson-Ross barkers to bark the long slabs. The equipment, when the pulp logs went entirely to the splitter mill, was capable of handling only small logs. Now all possible logs will be handled at the sawmill. The splitter mill will get only any

overload of logs good only for pulp, without question.

The barkers, the lift skids and transfers for carrying the discarded heart and sides of logs to the pulp mill and an acid bath for the aircraft lumber ran the costs for the company into the neighborhood of \$30,000. This equipped the Columbia River Paper Mills for more efficient aircraft lumber production. But, as pointed out, it also was a permanent improvement for lumber production.

The Columbia River Paper Mills also has obtained a 110-inch Carthage chipper which is being installed and is to be in operation, probably, by the end of February.

The Vancouver mill has a capacity of more than 200,000 board feet in eight hours' operation, which indicates a considerable possible aircraft output at that plant. L. E. Orthmann is sawmill superintendent.

Considerable noble fir for aircraft has been cut in the past few months, since this special work began. But because of the shortage of logs, it is now cutting practically all hemlock. It is cutting according to United Kingdom specifications, as its aircraft lumber is bought entirely by the U. S. Treasury for lend-lease shipment. In all specifications for airplane material—American, United Kingdom or any other—a high quality structural grade is required.

The company's other operation, the Oregon Pulp and Paper Company, at Salem, Ore., is also cutting aircraft quality lumber, but no special installations were necessary to handle it.

The Bellingham set-up is, perhaps, the most interesting one for any pulp mill that plans to recover aircraft cants from pulp logs. This is because the Bellingham installation is much simpler, merely a belt and transfers to carry the aero grade hemlock cants out of the pulp mill. No lumber is cut in the Bellingham plant. The recovered cants are trimmed down and shipped for remanufacture. Here the production is for American aircraft.

Government officials do not regard such installations as were made



F. H. BRUNDAGE, Western Log & Lumber Administrator, War Production Board.

at Bellingham as in the "temporary" class. They point out that any pulp and paper mills that put in such equipment, for perhaps as little as a few hundred dollars, can use the equipment after the war for recovery of timbers for repair or construction work around the plant.

The biggest producer of aircraft lumber in the nation is the Weyerhaeuser Timber Company of Longview, Wash. Here they are not only salvaging good pieces from pulp logs but are doing much cutting of Douglas and Noble fir for aircraft.

The Weyerhaeuser Pulp Division at Longview obtains all its wood from the nearby Lumber Division. Here Mill No. 3, on the second and third shifts, cuts hemlock for pulp. Even before the war, this mill had this equipment to save good cants for hemlock flooring and other special purposes. It was already well equipped to produce aircraft qual-

ity when the call came from Uncle Sam.

The Crown Willamette Paper Company, division of Crown Zellerbach Corporation, has been making plans for recovery of aero grade cants from hemlock logs at its Camas, Wash., plant. This company has had much experience in producing aircraft grades at its Cathlamet, Wash., sawmill. There it has been sawing spruce especially for aircraft.

With hemlock and Noble fir commonly accepted for aircraft nowadays, as well as spruce and Douglas fir, the opportunity for pulp and paper mills to recover aircraft grades is regarded by government officials as very good. Aircraft sizes range from one by four inches to six by twelve inches with lengths of from four to 24 feet. So, what used to be regarded as just ordinary pulp log has a chance now of helping to carry bombs to Tokyo and Berlin.

Pure-Pak Milk Containers Aiding Our War Effort

● The country is gradually realizing the importance to our war effort of many common civilian industries which are ordinarily taken for granted. For example, the manpower shortage on the farms and in the dairies has spotlighted the basic necessity for maintaining an adequate milk supply for the Army, Navy, war plants and for civilians generally.

Milk distribution is a sever problem. Population increases in centers of war production and new Army and Navy bases are two major factors in this problem of distributing milk under war time conditions. Paper milk containers are playing a highly important part in aiding milk distributors to meet changing conditions.

During 1942 the War Production Board recognized this and approved the use of raw materials by the Ex-Cell-O Corporation of Detroit for building twenty-four Pure-Pak machines. Twenty of these machines are in service and the other four are ready for assignment to duty when and where acute necessity requires.

Many of these machines were released by the WPB for installation in dairies that were either serving war plants, government arsenals, shipyards, Army camps or Navy bases. Pure-Pak paperboard milk containers are now being used in

thirty-nine Army camps and flying fields scattered throughout the country. Tens of thousands of them are being used daily in war plants.

A recent highly interesting example of how the Pure-Pak containers are aiding in our war effort is their use in daily shipments of milk from the north central states to Army camps in the deep South.

At the present time the milk situation in the southeast is reported to be very critical. They were not dairy states to begin with so the problem has been multiplied many fold by the construction of numerous Army camps throughout the South. Fresh milk simply is not available locally in sufficient quantities to supply the camps.

Every day a carload of fresh, liquid milk in Pure-Pak containers is hooked onto a fast passenger train somewhere in the north central states and headed for Army camps in the South. Before it leaves the milk is inspected by municipal and Army health authorities and checked again upon arrival.

After approximately 36 hours in transit Army officials have determined that the temperature of the milk averages 38 to 48 degrees Fahrenheit, and is sometimes as low as 35 degrees. They have also found that the fresh milk is in an excellent and palatable condition even

on the eighth day following pasteurization at the source.

These shipments would be next to impossible if glass were the only packaging material available. In the first place the milk packed in the Pure-Pak containers requires only one-half the transportation space that glass bottles would require and in the second place the Pure-Paks, being single service containers, save the freight car space that would be required to ship the empty bottles back to the north central states.

Paperboard milk containers are doing a big job, too, in promoting safe working conditions in many a war plant. After use they are not hazards to life and limb as the glass bottles proved to be when set down alongside of production machines.

From the standpoints of the various savings that paperboard milk containers make in manpower, trucks, tires, gasoline and in health, it is regrettable that their use was not more widespread before war's demand for metals curtailed the production of the necessary machines for filling and sealing containers of paperboard.

Women Employed In West Linn Mill

● For the first time in a quarter of a century, the Crown Willamette Paper Company, division of Crown Zellerbach Corp., at West Linn, Ore., has employed women in the plant. While other C-Z mills were continually increasing feminine contingents on their rolls, West Linn maintained its distinctiveness and it had almost become traditional that this was a "for men only" plant.

Four women—the first to be given plant jobs since the last war—went to work February 1. A week later, a dozen women were enrolled. They were given jobs at ream wrapping, sealing and small packaging of paper.

The Camas, Wash., mill enlisted women from Lebanon, Ore., but these were not drawn from the Lebanon plant.

Sid Drew At Edgewood Arsenal

● E. G. "Sid" Drew, member of the executive committee of the Pacific Section of TAPPI, and formerly chief engineer of the Hesse-Ersted Iron Works, Portland, has been at Edgewood Arsenal, Maryland, since early in January as a first lieutenant in the Chemical Warfare Service.

Prior to joining Hesse-Ersted last June, Lieutenant Drew was in partnership with John Hoffman in the firm of Drew and Hoffman, heating, ventilating, drying and dust control engineers of Portland. The firm was dissolved a year ago when Mr. Hoffman, a first lieutenant in the infantry reserve, was called to active duty. Several months ago Lieutenant Hoffman was promoted to captain, and is now receiving special training at a post in the Middle West.

Weyerhaeuser Mill Has Unique Honor Roll

● Here is shown a photograph of the new service honor roll sign at Weyerhaeuser's Pulp Mill No. 1 at Longview, Wash. It was designed and painted by Ed Bollon, filter plant operator, and is one of three distinctive signs on the Weyerhaeuser grounds in that city.

At the entrance gate to both the Timber and Pulp Divisions is a sign reading:

YOU CAN'T SPELL
VICTORY
WITH AN ABSENT T.

The T in Victory and the lone T in the last line are in red and all other letters are in black. It obviously is designed to combat "absenteeism" among the war workers of the two mills.

The other two signs are at the entrance to the Pulp mill. Mr. Bollon's, in colors, is topped by an eagle, gripping an American flag standard in its talons. Below is the honor roll, with 52 names inscribed in mid-February, with a globe as background.

Following are the names of the men from the Longview Mill, Pulp Division, who are serving the country in the armed forces:

John T. Evans, L. Arrington, C. W. Knopp, J. M. Gragg, John Klepp, Collin Slane, Howard Stone, E. R. Chapman, H. Jorgensen, G. Vernig, C. Hansen, E. A. Harry, E. Santman, B. H. Corman, F. C. Lewis.

C. J. Doggett, M. P. Ammons, M. M. Modin, C. L. Perdew, J. Surina, B. M. Nelson, H. Hinkelman, D. C. Clark, A. B. Harber, A. L. Harding, W. W. Quillen, W. R. Crump, G. L. Miller, L. L. Anderson.

D. M. Taylor, W. J. Crombie, George Theuner, A. W. Wallace, Homer Best, A. D. Fallman, C. F. Miller, N. N. Lepin, R. Countryman, T. Bemas, C. Beck, F. E. Beck, A. C. Bryant, P. E. Young, G. E. Filer, G. S. Backman, L. W. Miner, D. M. Hardin, M. W. Powers, E. S. Harrington, W. E. Bryant, Ralph Imeson and J. L. Bowers.



Beneath this scroll is a shield, inscribed: "Our National Bird—A Symbol of Liberty and Freedom. 'Old Abe,' the veteran eagle of Civil War fame, participated in 22 battles, encouraging and inspiring the troops of the Eighth Wisconsin Volunteers. After the war, 'Old Abe' was presented to the State of Wisconsin, where he remained in the care of the state capitol for 15 years. The bird died of old age in 1881."

Below this, in larger type, are the words: "Serving Our Country."

This is alongside the third Weyerhaeuser sign here, which is a reminder of the "Weyerhaeuser Pulp Bond Drive." It is aimed to spur purchase of bonds and shows a bomber, suspended from a wire, winging its way across the ocean from Longview to Tokyo.

Weyerhaeuser Men Meet In South Seas

● Lt. Herman Jorgenson and Lt. (j.g.) Graham Vernig, both U. S. N. and both on leave as technicians at the Longview Mill, Pulp Division, Weyerhaeuser Timber Co., have discovered that their "paths crossed" out in the far Pacific.

Lt. Jorgenson, whose former duties were connected with the research department's experimental digester, visited the Longview plant in late January. He served on transports landing troops in enemy-held islands. Lt. Vernig, who was on the experimental digester and later was transferred to the Longview lab, has written exciting reports of his experiences.

Oregon Suffering Newsprint Shortage

● A critical shortage of newsprint developed in Oregon in early February. This was due to the heavy curtailment in production of that kind of paper in the Columbia-Willamette area, which, in turn, resulted from lack of raw material. The heavy snow, following on floods, and the drain of manpower to industries and armed services reduced log production in Oregon to figures so low that the situation was desperate for many lumber and pulp and paper mills.

One of the leading newspapers in Oregon was reducing its size in early February at a rate of two pages each day. Many other publishers were feeling the pinch.

Newsprint Consumption Due For Second 10% Cut

● It was announced in Washington on February 9th that a second 10 per cent cut in newspapers' use of newsprint may be expected April 1st, by two War Production Board officials.

Newspapers were subjected to an approximate 10 per cent cut January 31, through W. P. B.'s order restricting consumption to 100 per cent of the volume of paper used to produce each paper's net paid circulation in 1941.

"The best available figures on the print paper situation indicate that a second cut in use of not to exceed 10 per cent, effective April 1, will be adequate to meet the current situation caused by the war," said a statement jointly issued by W. G. Chandler, director of the printing and publishing division, and Donald J. Sterling, W. P. B. consultant on newspaper and publishing industries.

The statement said the planned cut was compelled entirely by war needs and "factors of paper production."

"Equitable allocation of the print paper available after April 1 should not work undue hardship upon any publication nor handicap its essential service to the nation in war time," the statement by Sterling and Chandler declared.

"As in the case of the first order governing the use of print paper, the second order will deal only with the allocation of the available supply. W. P. B. will not attempt to say how the publisher shall use his print paper allotment."

"This statement is made because of the widely varying reports which have been circulating as to additional cuts to be made in the use of print paper."

Bob Kuhn In Chemical Warfare Service

● Robert M. Kuhn, secretary to Niles M. Anderson, mill manager, St. Regis Paper Company, Kraft Pulp Division, Tacoma, until its closing by the WPB on November 1st, is now a second lieutenant in the Chemical Warfare Service.

Lieutenant Kuhn is in training at Edgewood Arsenal, Maryland, and his address is Executive Offices, Building No. 219. He is a graduate from the College of Forestry, University of Washington and worked for St. Regis from the time of his graduation until last November, serving in various departments in the plant.

No Lost Time Accidents In Shelton Machine Rooms

for 6½ years—From September 16, 1936 to February 8, 1943—Average of 39 men have worked 2,134,080 hours.

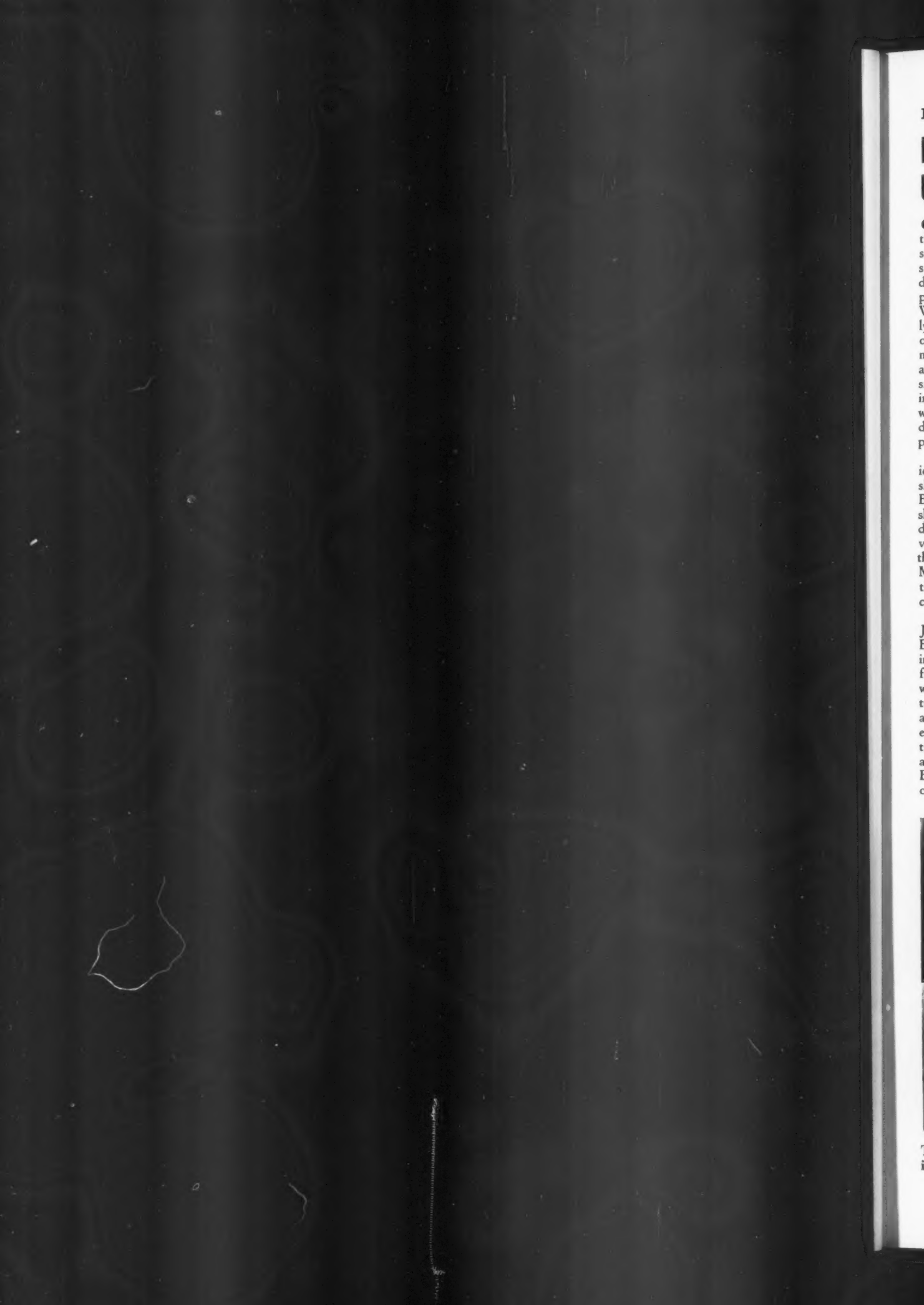
● A perfect six-and-one-half year safety record has been established by the machine rooms of the Shelton, Wash., division of Rayonier Incorporated.

The two pulp drying machines have operated without a single lost time accident from September 16, 1936, to February 8, 1943.

All during this period there has been an average of about 39 men

employed in this department. The number of man-hours worked without an accident totals 2,134,080.

Leonard Elmer Attwood, to whom chief credit goes for this enviable record, has been supervisor in charge of the department during all that period. The resident manager of the mill, who prefers that the honor go to Mr. Attwood, is G. J. Cropper.



R. P. Hill Joins Webster-Brinkley Co.

● Raymond P. Hill, president of the Pulp Bleaching Company, Wausau, Wisconsin, became technical assistant to George Gunn, Jr., president of the Webster-Brinkley Company, Seattle, on February 1st. The Webster-Brinkley Company, recently awarded an Army-Navy "E" for outstanding production of war equipment has been notably successful in availing itself of the services of outside suppliers. The company is now in the midst of rapidly expanding war work which will require further development of its subcontracting program.

Mr. Hill, through years of experience in utilizing more than one shop in the manufacturing of Pulp Bleaching Company equipment, is skilled in the technical problems incident to subcontracting. He will devote much of his time to supervising the growing subcontracting program. Mr. Hill will also adapt several of the Webster-Brinkley Company's collateral activities to war work.

Mr. Gunn, Mr. Hill and Thomas J. Bannan, vice president of Webster-Brinkley Company, all well known in the pulp and paper industry, have formed an association looking toward the development and manufacture of a line of process equipment after the war with particular reference to the pulp and paper industry. As a part of this program the assets and business of the Pulp Bleaching Company will be taken over by the association and the

Head of Pulp Bleaching Company named Technical Assistant to George Gunn, Jr., President, Webster-Brinkley Co.—Mr. Gunn, Mr. Hill and Thomas J. Bannan, Vice President, Webster-Brinkley Co., and Executive Vice President, Western Gear Works, form association looking toward the development and manufacture of a line of process equipment after the war with particular reference to the pulp and paper industry.

headquarters of Pulp Bleaching will be moved to Seattle in the near future.



R. P. HILL, Technical Assistant to the President, Webster-Brinkley Co.

All three men are engineers. All three have had diversified business and technical experience, and all three are familiar with and interested in the pulp and paper industry.

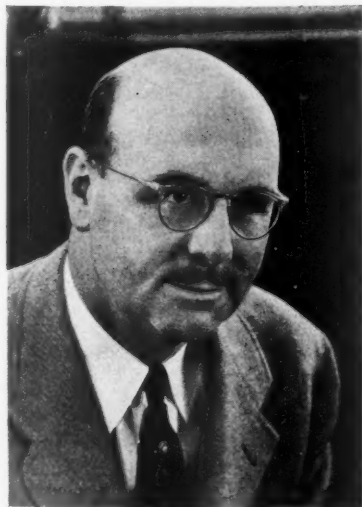
Mr. Gunn's business career began as a truck distributor in the Pacific Northwest and his success in this line led to his becoming vice president in charge of sales for the White Motor Company of Cleveland. Mr. Gunn returned to the Pacific Northwest to become interested in the pulp industry, serving as vice president of the Puget Sound Pulp & Timber Company for several years.

The Kirsten pipe, an invention of a University of Washington professor, interested Mr. Gunn and he acquired the manufacturing rights. By the time our entry into the war had caused the complete conversion of the Kirsten factory to the manu-

facture of high precision small metal parts, the Kirsten pipe had become a great success and was sold throughout the Continent and in foreign countries.

Early in 1940 Mr. Gunn and Thomas J. Bannan, executive vice president of the Western Gear Works of Seattle and Los Angeles and the Pacific Gear & Tool Works of San Francisco and Los Angeles, acquired the small foundry and machine shop of the Webster-Brinkley Company in Seattle, Mr. Gunn becoming president and Mr. Bannan vice president. Under their management the concern's facilities have been greatly enlarged for the manufacture of war equipment and engineering work has been carried on continuously, aimed toward improvement of the machinery manufactured.

Webster-Brinkley are producing a variety of war equipment including planetary and worm drive capstans; electric-hydraulic boat cranes; steering gears of the following types: steam quadrant, steam hydraulic,



THOMAS J. BANNAN, Vice President, Webster-Brinkley Co.



GEORGE GUNN, Jr., President, Webster-Brinkley Co.

electric-hydraulic and electric quadrant; single drum and double gypsy electric winches; and electric anchor, electric hydraulic and planetary windlasses.

The Western Gear Works, of which Mr. Bannan is executive vice president, has been an important supplier of gears and gear reducers to the pulp and paper industry since 1929. For a number of years the Pulp Bleaching Company's equipment installed in Western plants has been manufactured by the Western Gear Works.

Now completely devoted to the production of war equipment, Western Gear recently received recognition for the high quality of its work, the Army and Navy awarding the "E" flag to the company on February 6th.

Mr. Hill joined the Pulp Bleaching Company in 1924 as vice president and has served as president since 1930. This connection followed several years as assistant manager of the Hamersley Mfg Co. of Garfield, N. J., makers of waxing papers. For seven years previously he was manager of engineering and maintenance for the Crocker-McElwain Co., and the Chemical Paper Manufacturing Co. of Holyoke, Mass. Before his association with the paper industry Mr. Hill was in the electrical contracting business in Massachusetts and in Southern California.

Sue Batzer Dies In Alaskan Crash

● Miss Sue Batzer, a widely known and attractive 23-year-old ex-employee of the Crown Willamette Paper Company at Camas, Wash., was fatally injured in an airplane accident near Ketchikan, Alaska, on January 5. The tragedy was not disclosed until several weeks later when survivors from the plane reached an isolated beach after climbing down from the mountain range where the accident occurred.

Miss Batzer was a niece of A. W. Olson, assistant to J. E. Hanny, resident manager of the Camas mill, and a daughter of Mr. and Mrs. H. Batzer of Idaho Falls, Idaho. She worked at the mill for seven years in various secretarial positions. She was secretary of Fred A. Olmstead and later to George H. Galaway in the technical laboratory.

She resigned from her position in the mill just shortly before making the flight, in order to accept a position with the civil aeronautics administration at Anchorage, Alaska. She was on her way there in a Morrison-Knudsen Construction Company plane, piloted by the famous Alaskan flier, Harold Gillam, when the plane crashed against a mountainside near Ketchikan. There were four men in the plane besides Gillam. Two reached the

beach and told what had happened when they were picked up. The other three were still missing as this was written. The girl died at the scene of the accident from loss of blood. The others all were able to leave the plane.

Miss Batzer was a member of the girls' first aid team at the Camas mill while an employee there.

Women Working In Southern Mills

● Throughout the country women are taking over the jobs always handled by men in pulp and paper making. In areas of labor shortage in the South women are doing mill work that operating men would not have considered possible a relatively few months back.

Take the Brunswick Pulp & Paper Company's bleached kraft pulp mill at Brunswick, Georgia, for example. Assistant manager, William T. Webster, formerly general superintendent of the St. Regis mill in Tacoma, reports that at Brunswick they are keeping things going by substituting girls and older women. The laboratory is operated entirely by women as are the pulp trucks in the warehouse.

In the operating departments they are doing the following jobs around the clock: operating water plant, first helpers and testers in the bleach plant, lime kiln operators, caustic testers, screen room operators and helpers, digester helpers blowing digesters. As the war's demands on male labor increase it is expected that women will take over still more of the jobs in the mill.

Karnath Family Loses Two Members

● Two losses in the Karnath family of Camas, Wash., which has been well represented in the Crown Willamette Paper Company mill there, were recorded in recent weeks.

Charles Henry Karnath, who received a 35 year service pin from the Crown Zellerbach Corporation in 1941, died at the age of 68 on January 18. As a contractor, he built several streets in Camas before going into the mill where he was a hand saw filer. He served several terms in the city council.

His nephew, second lieutenant Lyle Karnath, former roll wrapper in the No. 1 finishing room in the Camas mill, was reported "missing in action" after making a bombing raid over western Europe on January 3 as a bombardier. The raid was made from England. He was wounded in an earlier action and had received the Purple Heart decoration.

In a letter to his wife recently, he said he could come home on invalid leave but wished to stay and return to duty.

His father, A. L. Karnath, is a machinist in the mill.

More Women Working In Weyerhaeuser Longview Mill

● As of February 1, there were 39 women employed in various production departments of the Weyerhaeuser Pulp Mill No. 1 at Longview, where the total crew is normally about 250. These women were employed in the screen room, chip room, laboratory, finishing room and other departments.



WEYERHAEUSER EVERETT MILL CELEBRATES VICTORIOUS DRIVE with a one-hour radio program over station KEVE in Everett on January 29th, dedicated to promoting the sale of War Savings Bonds.

The program culminated a successful drive to "Top 10% by New Years" and the highlight was the presentation of the Treasury Department "T" to be added to the Minute Man flag earned several months ago. The "T" signifies that more than 10% of the gross payroll is being invested each month in War Bonds through payroll deductions.

With few exceptions those participating in the program were employees of the Everett Mill, Pulp Division Weyerhaeuser Timber Co. Left to right in the above picture, DON MCPHEE, Master of Ceremonies; ROY POTTER, member of the Mill Bond Committee; HAROLD STEELE, Chairman of the Mill Bond Committee accepting in behalf of all the employees the Treasury Department's award from Thomas W. Paul, Snohomish County War Bond Chairman; RAY VERLINDA, member of the Mill Bond Committee; and ARTHUR WELEBER, member of the Mill Bond Committee.

The Softening Effect of Saturated Steam Under Pressure And Steaming Time on Western Hemlock and Sitka Spruce

by O. H. SCHRADER, Jr., Ph. D.*

THE softening effect of saturated steam on wood is a well-known phenomenon that has been exploited to advantage in a number of commercial instances and has reacted as a distinct disadvantage in others. It is general practice to steam or boil logs or flitches of refractory species before slicing them into high grade veneers, and steaming of pulpwood bolts prior to grinding has been common practice. The plasticizing effect of steam has been used to advantage in bending and in molding wood to desired shapes. Conversely, it has been necessary to limit the use of high temperatures or steam under pressure in drying and preserving processes because of the detrimental influence of such treatment on the strength properties of the wood.

Although these and other instances of the application of steam to make use of its softening effect may be cited, precise information relating to the extent of the decrease in hardness as correlated with time and steam pressure appears to be lacking. Although the investigation covered by this report is intended to supply fundamental data in the development of a new mechanical pulping process in which the softening effect of saturated steam is a major factor, these data are also applicable to other processes.

A special apparatus to test the hardness of the wood while the test specimens were immersed in saturated steam at the desired pressure reproducing the conventional hardness test so that the results obtained would be comparable with available data, was therefore constructed. The apparatus, in position for testing as pictured in Plate I, consisted of a steel cylinder $4\frac{1}{2}$ inches in diameter and 18 inches long with a bolted door at one end. To provide a flat bearing for the test specimens a longitudinally disposed sheet of steel was welded in place in the lower

half of the cylinder. This sheet terminated near the closed end of the cylinder, leaving a small well from which condensate could be drained through a pipe normally closed by a valve.

As hardness is conventionally measured as the load in pounds required to embed a steel hemisphere 0.444 inches in diameter in the wood, a vertical rod, with such a hemispherical surface at its head or lower end, was inserted through a hole drilled through the top of the horizontally disposed cylinder, escape of steam under pressure being prevented by an appropriate stuffing box, gland and packing. In making the test, the downward travel of the rod was measured by directing a pointer to a reference mark on its surface after the rod had been brought lightly into contact with the wood, and then measuring the load required to force it into the wood to a depth of 0.44 inches, as indicated when a second reference mark came into juxtaposition with the pointer. A rod which passed through a stuffing box in the bolted door at the end of the cylinder was used to move the test specimen after a test had been completed, so that several tests could be made on the same specimen without opening the cylinder. The test cylinder was lagged with insulating material to reduce heat losses.

Steam was generated in a small boiler that had a capacity of 4 liters, which was heated with a laboratory gas burner. The steam supply pipe from the boiler to the cylinder was equipped with a valve so that the pressure could be built up in the boiler without heating the cylinder. The pressure consequently could be brought up very quickly to the desired level in the cylinder. Several pilot runs were made to determine the surplus pressures required in the boiler so that when the valve was opened the pressure would immediately equalize in the boiler and cylinder at the desired level. A steam gauge on the boiler permitted accurate readings of the pressures attained.

The test cylinder was positioned on the platform of a 30,000 pound Olsen testing machine and the boiler and accessories were suspend-

ed from the frame of the platform by wires. The entire apparatus, including the water in the boiler, was weighed prior to each series of tests, and the balance arm on the testing machine was adjusted for this dead weight. This obviated the necessity of making adjustments for the weight of the condensate in the test cylinder during and between tests.

In making each test the downward travel of the rod was opposed by the steam pressure within the cylinder as well as by the friction developed in the stuffing box. This resistance was measured at the beginning of each test by raising the rod so that the hemispherical head was approximately one inch above the level of the block to be tested and noting the load required to overcome this resistance. This load was subtracted from the final reading to obtain a net reading indicating the load, in pounds, required to embed the hemispherical head in the wood specimen.

Wood from two native species Western hemlock (*Tsuga heterophylla*), and Sitka spruce (*Picea sitchensis*), which are well adapted to the production of mechanical pulp and which form a considerable portion of the material remaining on the ground after logging, was used in this investigation. The test specimens were cut from clear, green material which represented a fair range of the specific gravity and growth-characteristics inherent to these species.

Tests were made on the tangential faces of the test specimens. The radial and tangential faces have been found to be approximately equal in hardness, on the basis of tests made by the U. S. Forest Service (¹), but it was found that specimens tested on the radial face exhibited a greater tendency to split when they were tested after the wood had been softened by steaming. Green hemlock strips 1"x3"x7" in size and spruce strips 1"x2"x7" in size were selected as test specimens.

Four groups of five specimens from each species were tested. One group was tested while immersed in saturated steam under a gauge pressure of 25 pounds per square inch (267 degrees F.), one at 50 pounds (298 degrees F.), one at 75 pounds

*Assistant Professor, Forest Products, College of Forestry, University of Washington, Seattle. This investigation was undertaken as a preliminary step in the development of a new mechanical pulping system now being studied at the College of Forestry, University of Washington. This pulping system is being devised to make use of the material left on the ground after logging in the Northwest, and is a part of the utilization program sponsored by the Washington State Planning Council, with the approval of Governor Arthur B. Langlie and directed by Professor Bror L. Grondal, College of Forestry, University of Washington.

TABLE 1

Western Hemlock
Hardness as Affected by Exposure to Various Pressures of Saturated Steam

Spec. No.	Spec. Grav.*	Steam Press.† lbs./sq. in.	Ave. Hardness Cold (pounds)	Steaming Time‡ (min.)	Hardness (pounds)	Steaming Time‡ (min.)	Hardness (pounds)	Steaming Time‡ (min.)	Hardness (pounds)
1-A	0.57	25	480	15	315	30	265	45	220
3-B	.47	25	393	10	225	20	150	35	90
5-D	.45	25	455	12	350	25	280	35	240
5-F	.55	25	672	12	340	20	270	35	170
6-A	.56	25	560	8	260	15	235	28	220
2-B	.52	50	400	5	270	15	175	35	150
2-C	.45	50	393	5	315	25	195	45	175
3-A	.49	50	408	5	240	15	160	30	140
5-E	.51	50	555	12	280	22	270	37	240
6-D	.43	50	458	8	210	22	160	35	155
1-C	.57	75	563	5	365	15	235	30	175
1-F	.58	75	628	15	240	25	220	40	205
4-C	.38	75	370	12	145	25	145	38	130
5-B	.59	75	747	10	295	24	205	40	175
6-C	.42	75	427	10	125	20	85	35	180
5-C	.59	100	685	10	235	20	165	30	60
6-E	.43	100	393	8	155	20	110	30	70
7-E	.44	100	380	10	160	20	125	30	90
6-B	.53	100	540	10	215	23	160	33	120
7-D	.47	100	403	12	155	23	125	33	85

*Based on oven-dry weight and volume.

†Saturated steam, gauge pressure.

‡Total elapsed time of exposure.

TABLE 2

Sitka Spruce
Hardness as Affected by Exposure to Various Pressures of Saturated Steam

Spec. No.	Spec. Grav.*	Steam Press.† lbs./sq. in.	Ave. Hardness Cold (pounds)	Steaming Time‡ (min.)	Hardness (pounds)	Steaming Time‡ (min.)	Hardness (pounds)	Steaming Time‡ (min.)	Hardness (pounds)
21-A	0.43	25	422	10	230	20	185	30	155
37	.42	25	372	10	200	20	170	30	40
27-A	.40	25	322	10	175	20	175	30	120
108	.39	25	360	10	220	20	185	30	115
18-B	.44	25	350	10	195	20	190	30	105
2	.37	50	313	10	115	20	100	30	80
30	.44	50	370	10	145	20	130	30	80
105	.40	50	340	10	180	20	155	30	120
209	.40	50	317	10	175	20	160	30	115
19	.41	50	313	10	140	20	135	30	75
211	.39	75	322	10	125	20	125	30	90
103	.38	75	318	10	130	20	120	30	70
12	.42	75	435	10	145	20	115	30	80
13-B	.39	75	298	10	115	20	115	30	70
38	.40	75	355	10	130	20	120	30	80
4	.40	100	327	10	80	20	75	30	45
201	.43	100	350	10	130	20	110	30	80
205	.41	100	345	10	140	20	105	30	50
33	.39	100	329	10	80	20	60	30	50
14-B	.40	100	342	10	85	20	70	30	35

*Based on oven-dry weight and volume.

†Saturated steam, gauge pressure.

‡Total elapsed time of exposure.

(320 degrees F.), and one at 100 pounds (338 degrees F.). Three tests were made on each specimen. After each test the specimen was moved with the rod which passed through the stuffing box in the door of the cylinder so that successive tests were spaced about one and one-half inches apart. In most cases, this spacing was sufficient to prevent splitting. During the tests it became necessary to reject only a few pieces that split. Splitting was evidenced by an abrupt release of the load during the progress of a test. Before a specimen was placed in the test cylinder, three tests were made on one tangential face which was placed in contact with the metal platform in the cylinder. The results of these three tests were then averaged to give a "cold-hardness"

value. This procedure made it possible to reject specimens with hard or soft spots that might otherwise have distorted the readings obtained in the test cylinder when it contained steam under pressure. The time-interval spacing of successive tests made in the cylinder varied, as will be noted in Table 1, which presents the basic test data on hemlock. This variation was occasioned by a desire to determine the influence of the length of time of steaming upon the hardness of the wood. In testing the spruce specimens, fixed time intervals of 10, 20 and 30 minutes between tests were used. The data obtained from the spruce tests are presented in Table 2.

A chart was prepared from the data in Tables 1 and 2 for each test, hardness being plotted against the

time element. An average curve was then prepared from each group of five specimens that were tested at the same steam pressure by interpolating from the individual curves and averaging the values for the identical time intervals. The curves prepared in this manner for hemlock are shown in Fig. 1 and for spruce in Fig. 2. Although test specimens varied in specific gravity and hence in initial or "cold-hardness," no attempt was made to adjust the test data to allow for this factor because its effect after the wood had been subjected to the action of saturated steam under pressure appears to be negligible. The results seem to indicate that specific gravity becomes relatively unimportant as a factor after the material has been steamed for approximately 10 minutes.

Contours Similar

● Examination of the curves in Figures 1 and 2 discloses that the contours are all similar. The reduction in hardness occasioned by steaming is very abrupt during the first 5 to 10 minutes, and the steepness of the curves decreases regularly within the limits of the testing periods. The form of the curve obtained during the first few minutes of exposure to steam was confirmed by a series of special tests in which hardness readings were taken as rapidly as possible after admitting steam to the test cylinder. In these tests, three readings were taken during the first 7 minutes of exposure. The curves tend to approach a horizontal straight line near the end of the 30 minute time-limit, according to available data, although undoubtedly they do not become strictly horizontal. Further significant decreases in hardness after extended periods of steaming would perhaps occur. The starting points of the curves differ somewhat, due to differences in specific gravity of the wood and other factors that affect the hardness of cold, green material. It will be noted, however, that the curves for the various pressures arrange themselves in proportionate positions within a few minutes after steaming has begun and remain essentially parallel beyond that point. The 75 and 100 pound curves for hemlock do not become adjusted as quickly, probably because hemlock may resist the effect of the steam to a greater degree than the spruce, and also because a number of specimens of high specific gravity was included in each of these groups.

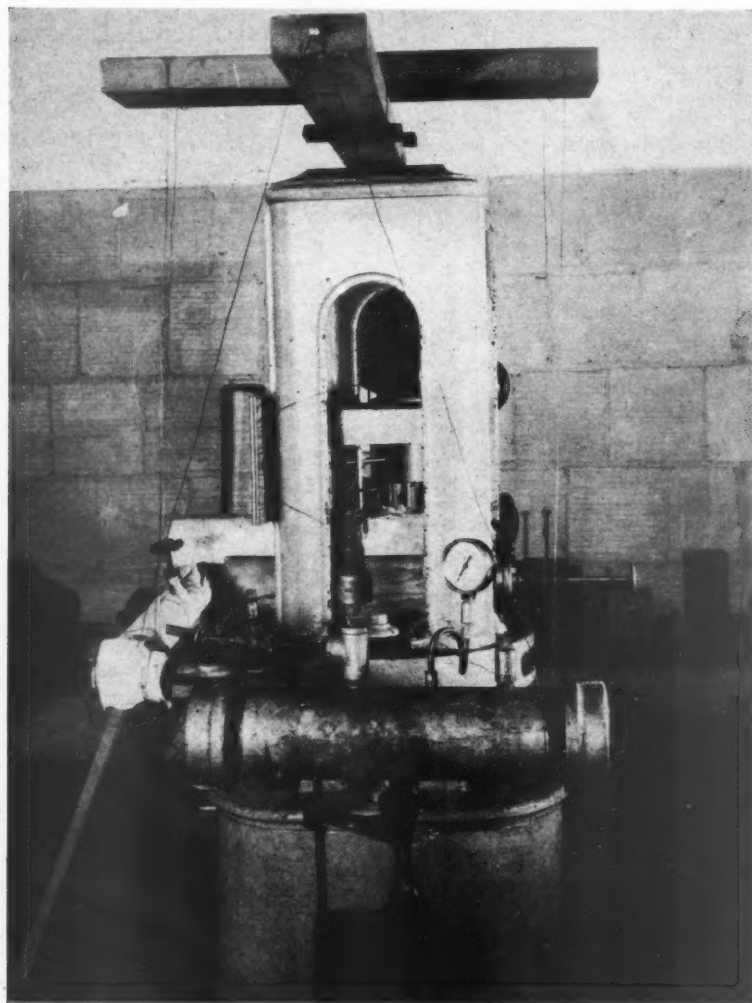


PLATE I

Olsen Testing Machine, showing steam boiler suspended from weighing bed of machine and test cylinder in place for testing specimen.

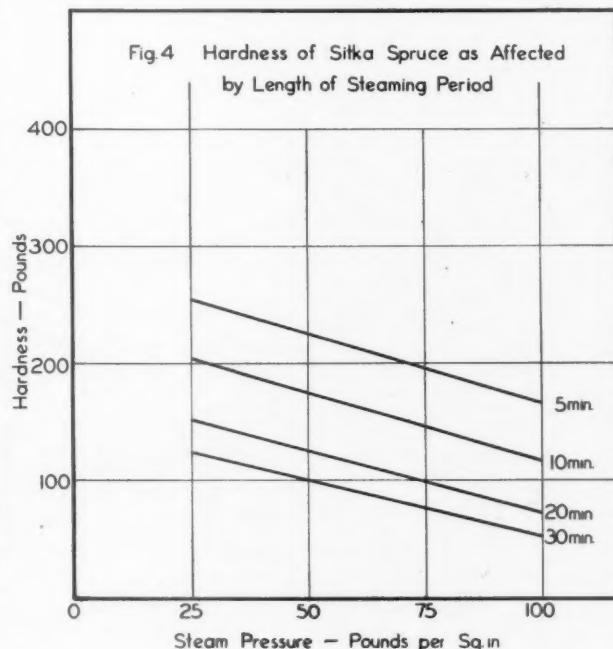
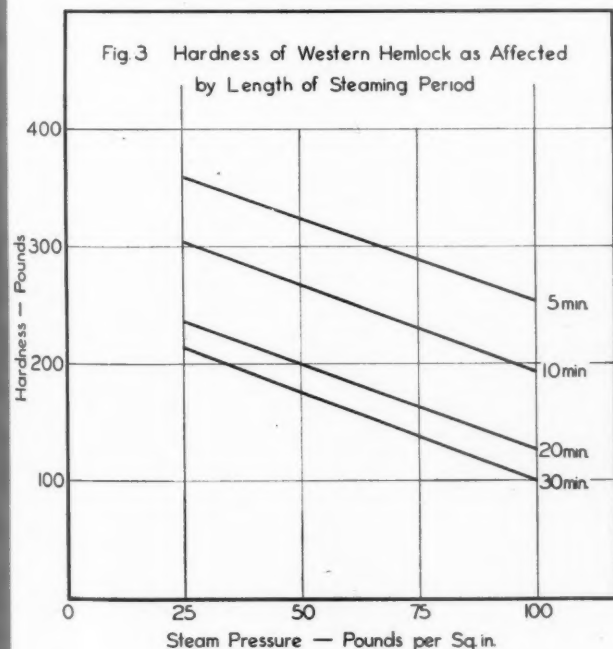
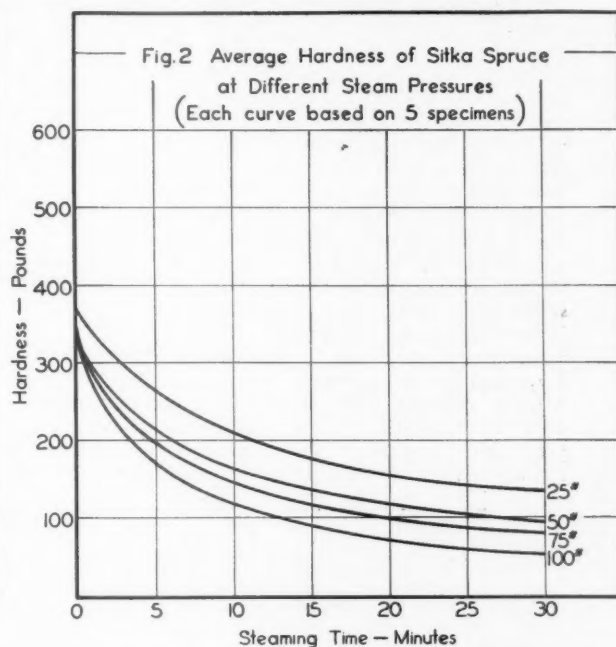
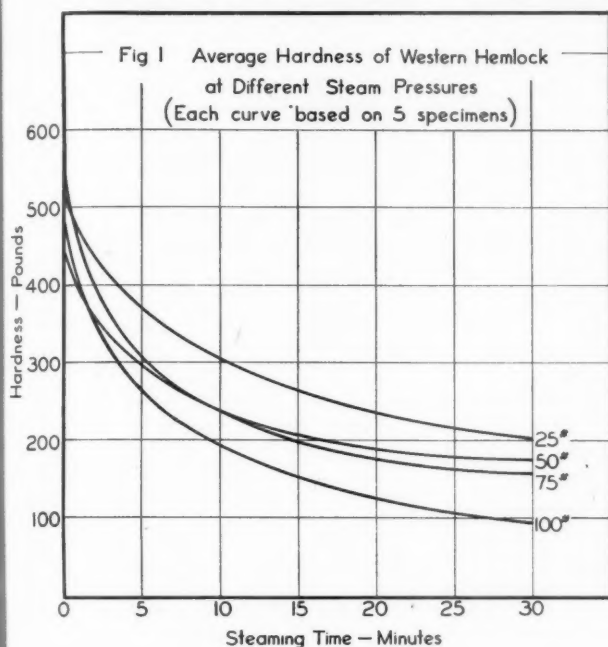
Ten Minute Steaming Advisable

● The comparative effect of the various steam pressures employed in these tests as shown by these curves becomes plainly evident within the first 10 minutes of the steaming period. This is again shown by the relative orientation of the different curves that takes place during this period. Beyond this time continued steaming produces about the same amount of softening regardless of the pressure used. From an economic aspect it may be concluded

that a steaming period of about 10 minutes will be most advisable in softening the wood preparatory to a pulping operation based upon mechanical disintegration of the wood, for beyond this time limit the curves flatten out and the differential effect of the various pressures used will already have come into play.

To demonstrate more explicitly the effect of the time element, the hardness values at the 5, 10, 20, and 30 minute time intervals were

plotted against the steam pressures used. The resulting curves (Figures 3 and 4) are straight lines all having approximately the same slope. It is evident from these charts that the time element becomes less important after 10 or 15 minutes of steaming. This is graphically illustrated by the relative spacing of the different time curves. There is approximately as much of a gap between the 5 and 10 minute curves as between the 10 and 20 minute curves although the time differential is only one-half as large. The 20 and 30



minute curves are relatively closer to each other. The fact that these curves are nearly parallel for their entire length is a further expression of the general contour of the curves in Figures 1 and 2 beyond the 5 minute exposure time.

Hardness Recovery

● Another factor of interest was the rate of recovery of hardness when a specimen was removed from the atmosphere of steam to which it had been exposed. This factor is an important consideration in a proposed pulping process in which pulp will be mechanically produced. When test specimens were subjected to a hardness test after they were removed from the test cylinder a regain of from 30 to 50 per cent of the reduction from the original hardness occurred within the first 10 minutes after release of the steam pressure. The temperature of the air in the laboratory was approximately 70 deg. F. and the relative humidity 30 per cent. Figure 5 shows typical hardness-regain curves for hemlock and spruce, each curve being based on data from three specimens of approximately equal specific gravities. The specimens were first steamed at 50 pounds pressure for 15 minutes. A hardness test was then made and the pressure

released. Tests were then made at 10 and 20 minute intervals after releasing the pressure. It was found that the recovery in hardness that takes place during the first 10 minutes is very rapid and during the next 10 minutes decreases abruptly. The curves suggest the necessity of housing a proposed mechanical pulping apparatus in a steam-tight container so that full advantage of the softening effect due to steaming may be gained in such a defibering process.

Conclusions

● The softening of Western hemlock and Sitka spruce by steaming the wood of these species at pressures of 25 to 100 pounds is roughly proportional to the steam pressure after 10 minutes exposure. During the first 10 minutes of steaming the softening effect is greater for the higher pressures. Steaming times in excess of 15 to 20 minutes are not economically desirable as shown by the flattening of the curves beyond this point.

Although the specific gravity of Western hemlock and Sitka spruce is an important factor affecting the hardness of the wood under normal conditions this factor is of relatively slight importance when the wood is

subjected to the action of saturated steam under high pressures.

The recovery in hardness after the release of the steam pressure is very rapid, amounting to 30 to 50 per cent of the reduction from the initial hardness during the first 10 minutes after release of the pressure.

There is apparently no critical pressure at which softening occurs within the limits investigated (25 to 100 pounds per square inch) and the results achieved are approximately proportional to the pressures used if a steaming period of at least 10 minutes is employed.

Reference

¹ Strength and Related Properties of Woods Grown in the United States. L. J. Markwardt and T. R. C. Wilson, U. S. Dept. Ag., Tech. Bull. No. 479, Sept. 1935.

Sydney Gibson Elected Credit Union President

● At the annual meeting of the Puget Pulp Credit Union in Bellingham, January 25th, the following officers were elected: Sydney Gibson, president; Ralph Cameron, vice president; Tom D. Hutchinson, secretary-treasurer.

Directors elected included: J. L. Smith, Pete Anderson, Darrel Mock, Tom Hutchinson, Sydney Gibson, Walter Sewell, Stanley Lewis, Sidney Collier, Isaac McDougale and Ralph Cameron. The credit committee was expanded to include E. O. Carr, Gerald Green, Glen McDonald, Harry Telgenhooff, Stanley Lewis and Isaac McDougale.

The credit union's affairs were revealed to be in excellent shape.

J. D. Zellerbach Named To Army Committee

● J. D. Zellerbach, president of Crown Zellerbach Corp., San Francisco, was one of 11 outstanding civilians recently appointed by the War Department to a national purchase policy advisory committee for the Army. He is the only member West of the Mississippi.

Mr. Zellerbach was in Washington in mid-February to attend the initial meeting of the committee, set up by General Sommerville to advise on the purchase of Army supplies.

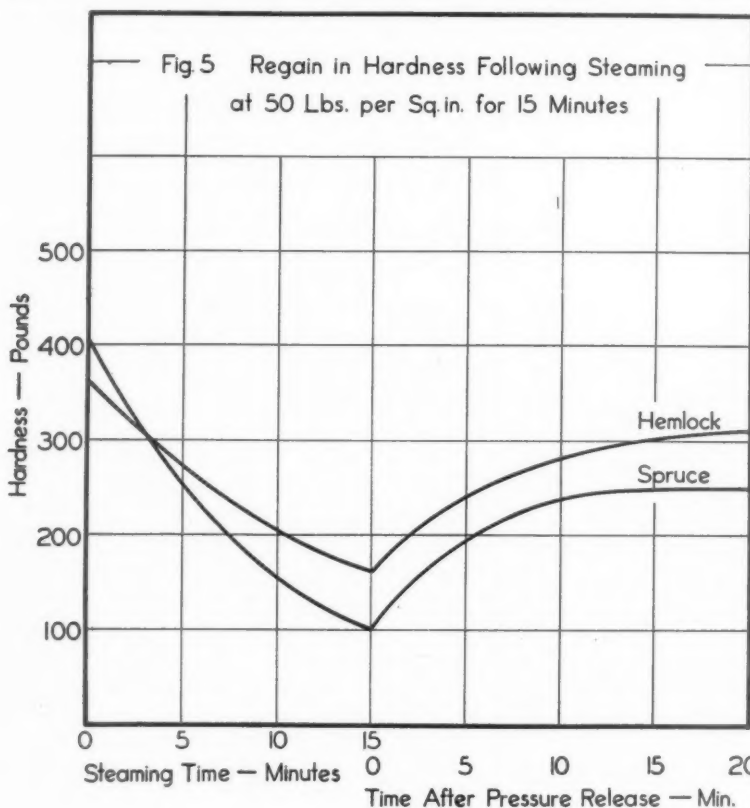
His new duties were expected to consume considerable time, probably requiring attendance at monthly committee conferences in Washington, D. C.

Pettis Is Youngest Major In Quartermaster Corps

● Major John A. Pettis, Jr., who worked for nearly two years in the store room of the Crown Willamette Paper Company at Camas, Wash., is believed to be the youngest quartermaster corps major in the U. S. Army. He is only 26 years old.

This is the claim made by his superior officers at Fort Warren, Wyo. Major Pettis, whose home is in Berkeley, Calif., is director of internal security, director of military intelligence and provost marshal at Fort Warren.

He enlisted two years ago, entering as a lieutenant.



Lieutenant David Killam Returns to Vancouver

● Lieut. David Killam, D.S.O., son of Lawrence Killam, president of British Columbia Pulp & Paper Company, returned recently to his home in Vancouver after nearly three years overseas during which he was decorated for valor at Dunkirk.

While in training in Britain he volunteered to go with a demolition unit to LeHavre to blow up installations before the Nazi forces arrived. He made three attempts to dash for the shore in a speedboat from a destroyer; three times the craft was capsized by near-misses from shore batteries.

Later, Lieut. Killam served sixteen months with launch patrols off West Africa.

Crown Willamette Inn Housing Extra Mill Workers

● The Camas Day Nursery, which was described in a recent issue of this magazine as a community project which the Crown Zellerbach Corporation helped to establish, has been moved from the basement of the Crown Willamette Inn across the street to the basement of the Lutheran Church in Camas, Wash.

This move was made in order to provide additional dormitory space in the inn for mill workers. In the west end of the basement, where the nursery held forth, a dormitory has been set up for about twenty women workers brought to Camas for work in the mill.

Dormitories for 100 men workers have been arranged in the inn by converting the first floor dining room to this purpose and also the top floor and the east end of the basement. The latter location is separated from the new women's dormitory by the inn's power plant.

There also are about 100 rooms in the inn used by both workers in the mill and persons engaged in other occupations.

The Crown Zellerbach Corporation is going to pay the rent, light and heat bills for the day nursery in the church building. It had also bought equipment to inaugurate the nursery project, which cares for children of many women employed in the mill and other industries doing war work.

Cold Weather Loses Three Days for Woodfibre

● During the January cold spell in the Pacific Northwest the Woodfibre, B. C., bleached sulphite pulp mill of the British Columbia Pulp & Paper Company, lost three days production when the temperature dropped to four degrees below zero. Log pond and pipes froze in this unusually low temperature and kept maintenance crews busy.

Paper Production in 1942

● Estimates of paper and paperboard production in 1942 as compiled by the American Paper & Pulp Association, indicate a total of 16,522,000 tons of which 7,600,000 tons were paperboard.

The Bureau of the Census gives actual production in 1941 as 17,304,143 tons.

The Pulp and Paper Division of the WPB estimates that 1943 production will be limited to not over 14,300,000 tons, which indicates clearly the possible effect of the war on 1943 paper mill operations.

TAPPI to Hear of Melamine Resins At Portland Dinner Meeting

● The Pacific Section of TAPPI will hold its March dinner meeting as scheduled, on March 2nd at 6:30 p.m. in the Heathman Hotel (old) in Portland.

Vice Chairman Clarence A. Eng-house of West Linn has ironed out the war-time difficulties involving food service and has arranged an interesting and instructive program of three papers and a moving picture.

Resins in papermaking are of prime interest today, and those that improve wet strength of papers and paperboards are of vital importance in the industry's war products. Experimental work with resins is going on in laboratories and mills all over the country. Some of the resins, like the melamines, are relatively so new that technical data is not yet obtainable on all of their potential applications.

Ralph Kumler, technical service representative of the heavy and paper chemicals division of the American Cyanamid & Chemical Corp., New York, makers of melamine resins, will bring to the March TAPPI dinner the latest data on "Melamine Resins for Wet Strength Treatment."

The second paper sets forth the results of some original experiment-

al work by Robert A. Baum, assistant chief chemist, Fernstrom Paper Mills, Inc., Pomona, Calif. Of value to paper and board makers is his paper, "The Effect of Alum Flocc on Pulp Strength Development," which will be entered in TAPPI's Shibley Award contest.

Efficient steam production will be the subject treated by Claude W. Callaghan of The Flox Company, Tacoma, in his paper, "Powerhouse Efficiency."

Closing the program will be a moving picture on deep sea fishing titled "Fish from Hell."

Notices of the meeting have been sent out by Robert M. True, secretary-treasurer of the Pacific Section, asking that ALL WHO PLAN TO ATTEND THE PORTLAND DINNER SEND IN REPLY CARDS IMMEDIATELY. This request arises from the shortages of some foods and the difficulty of obtaining sufficient kitchen and dining room help to serve larger gatherings. Those who may not have received notification of the meeting but wish to attend should advise Mr. True in care of the General Dyestuff Corporation, Terminal Sales Building, Portland, Oregon.

PORTLAND TAPPI DINNER

The scheduled Dinner Meeting of the Pacific Section of TAPPI will be held on Tuesday evening, March 2nd, at 6:30 p.m. in the Heathman Hotel (old), Portland Oregon. Three papers are on the program.

"Melamine Resins for Wet Strength Treatment," by Ralph Kumler, technical service representative, American Cyanamid & Chemical Corp., New York.

"The Effect of Alum Flocc on Pulp Strength Development," by Robert A. Baum, Assistant Chief Chemist, Fernstrom Paper Mills, Inc., Pomona, Calif.

"Powerhouse Efficiency," by Claude W. Callaghan, The Flox Company, Tacoma. A moving picture will complete the program.

RESERVATIONS MUST BE MADE IN ADVANCE due to food and labor shortages, and should be mailed to Robert M. True, Secretary-Treasurer, Pacific Section of TAPPI, Terminal Sales Building, Portland.

Vital War Work of the Paper Industry Told at Camas Service Pin Dinner

THE VITAL role which pulp and paper mills are performing in fighting the war and the devotion and loyalty of those who stay home to the mill workers who have gone into the armed services were the two themes of the service pin banquet program held at Camas, Wash., Friday evening, February 5 by the Crown Zellerbach Corporation, Crown Willamette Paper Company Division.

In each one's characteristic manner, the three principal speakers stressed these two themes. J. D. Zellerbach, president of Crown Zellerbach Corporation; William D. "Billy" Welsh, public relations representative, and J. E. "Jack" Hanny, resident manager of the Camas mill, all spoke with deep pride of those who have left the mill to serve our country and of the loyal personnel who have remained in Camas to produce the paper and other war materials needed to achieve victory.

This successful service pin banquet was held under greater difficulties than previous ones due to war-created conditions. Mr. Zellerbach, who is a member of the ad-

Honor paid to the 310 men from the Camas mill in uniform and to those who remain at home to produce needed paper and other war materials—Service pins awarded to 75 men and women of Camas.

sory committee to the Pulp and Paper Division of the War Production Board, was barely able to reach Camas from Washington by plane and train in time for the dinner. Several pin recipients could not be present owing to their various extra wartime duties.

For the first time the Crown Willamette Inn was unavailable because its dining room is filled with beds for war workers in an effort to ease the housing shortage. Shortage of kitchen and dining room help threatened the event, too, but the wives of mill workers and other women of Camas came to the rescue. Several, under Mrs. Kenneth Weidman, wife of a veteran backtender at the mill, cooked the turkey dinner and others under Rose Lambert, wife of Joe Lambert, a paper mill employe, served the food. It was a Parent-Teacher Association effort and the banquet was held in Nora Self Hall, which belongs to

the Camas school system.

Sixty-eight employes received pins for terms ranging from five to thirty-five years. Seven additional pins were given to men on leave in the armed services and these were received by their women-folk who sat at a table of honor facing the speakers' table.

An orchestra played through the period given over to eating a home cooked style feast, after which Victor C. Gault, personnel supervisor, Crown Zellerbach Corporation, took over as the master of ceremonies.

He introduced those sitting at the head table with the speakers (left to right)—Otto Hartwig, Crown Zellerbach safety supervisor; Mayor J. Woodworth of Camas; J. R. Frum, assistant vice president, Portland; A. G. Natwick, assistant resident manager at Camas "and a Republican, may I add" (said Mr.



255 YEARS OF SERVICE with the Crown Willamette Paper Company Division of Crown Zellerbach Corp., are represented by these eight 35 and 30-year Service Pin Winners (exclusive of President J. D. Zellerbach).

They are, left to right, FRANCIS W. PROVINCE, fire chief and former mayor of Camas, 35 years; WILLIAM KOUTS, construction millwright, 30 years; GUST DAVALIS, waste job, 30 years; WILLIAM MORRIS, main locker room attendant, 35 years; FRED STEVEY, chief electrician, 30 years; J. D. ZELLERBACH, President Crown Zellerbach Corporation, who awarded the Service Pins; JOE MORAVEC, engineer, 30 years; WILLIAM NEWCOMB, machine tender, 30 years; TOM POULAS, paper machine clothing foreman, 35 years.

Gault, getting one of the hearty laughs of the evening); E. P. Stamm, logging manager for the Crown Zellerbach Corp.; F. N. Youngman, vice president in charge of the Portland office; G. W. Charters, assistant resident manager at Camas, and Axel Branstrom, forester, Crown Zellerbach Corp. And also those who sat on the wings of the head table—Mrs. Vera Berney, assistant personnel supervisor; Miss Christine Kropp, secretary to Mr. Hanny; Roy Packer procurement division, machine shop war production; B. A. Davis, president of the paper makers' union; Joe Ast, president of the brotherhood of pulp, sulphite and paper mill workers; E. F. Gick, publisher, The Camas-Washougal Post-Record; George Williams, columnist on that paper; Ted Salisbury, editor, Pulp and Paper News; Jack Litzer, president, Chamber of Commerce; Reg Haight, president, Kiwanis; Earl Cole, president of Lions, and two representatives of Pacific Pulp & Paper Industry.

Mr. Gault read a letter from Vice President Albert Bankus to Mr. Hanny in which Mr. Bankus expressed regret that he was unable to attend owing to pressure of business in San Francisco and extended "my very best wishes and congratulations to service pin winners."

310 Camas Men in Uniform

● Also congratulating those receiving service pins, in his talk Mr. Hanny said feelingly: "Without these people I don't know how we could keep things going. These are the ones who stick with us. They know no one is ever let out of this company after giving the best years of his life in its service."

Mr. Hanny announced that there were 310 former Camas mill workers in uniform. He read a letter from a service man expressing thanks for a life insurance premium check from the company.

"We are writing letters to these men in the service every day," said Mr. Hanny. "We hope they all come back safely."

In Mr. Welsh's speech he stressed that the service pins "are not baubles—not pieces of costume jewelry" but "represent something in human association, and seem eminently more important now than ever before."

Welsh Stresses War Work of Camas Mill

● Mr. Welsh said the mill workers' direct contributions to the war were many and he stressed the work be-

ing done in the machine shop at no profit, building and finishing materials for warships and cargo vessels.

"Would you believe," asked Mr. Welsh, "that in the making of paper alone you are actually building cargo ships? Paper, in all of its uses, provides a lighter packaging material than other products. It permits more economical use of precious cargo space. And the space and weight saved through use of paper actually adds to the number of ships available to ourselves and our allies. May I be a little more elementary in the illustration. Pan-American Airways has been doing an amazing job of carrying needed military foods, medicines and supplies across South America and over to the African continent for months at a saving of 500 pounds per plane by insisting that practically all cargo be packed in paper. And there were times when 500 pounds of vital plane or tank parts could well be credited with saving the day for the Allied cause."

"Let me paint you another current picture. You doubtless have all thrilled at the accomplishment of building the new road to Alaska. You all realize that the distance is long and that trucks making this long trip with military supplies cannot carry any more deadweight than is absolutely necessary. Picture, if you can, a big truck arriving in White Horse every six to eight minutes of the day, transferring its cargo to a waiting plane en route to an unnamed Russian war front. And picture, if you can, how constructively important your job becomes when you suddenly realize that because of it, hundreds of tons of valuable cargo space is saved for plane and trucks because of the lighter paper packaging."

"Gentlemen and ladies—in the job you are doing here may well rest the outcome of a battle, the life of some American or allied soldier. The sheet of paper which may seem monotonous and commonplace to you today, may tomorrow be off on a glorious adventure."

"You can't fire a jumbo roll of paper out of the mouth of a machine gun or a cannon. It just can't be done. You can't make a machine gun part or emplacement out of paper. It just won't work. You can't make an airplane magneto or bombsight or other fitment out of paper. It just doesn't make sense. But when each transport plane flying to Africa over the rim of the world to Russia carries 500 pounds more bullets, or machine gun replacements, or airplane fitments because they were packaged in some kind of paper instead of heavier materials, does it stretch your imagination too far to believe that paper made in this mill may have played a humble, yet important part, in saving Stalingrad?"

"If 500 more pounds of blood plasma can be flown across the seas in each airplane because of paper packaging, wouldn't you feel pretty good about your job and your product, especially if that 500 pounds of blood plasma helped to save the leg or the life of an American boy—or a Russian boy—or an English boy—maybe your boy or the neighbor boy who went to school with him in Camas or Washougal? There is nothing wildly imaginative about it. It all adds up."

"Now do you see how the men and the products from this mill and this community are planting the city limit signs of Camas on all war fronts of the world?"

"The paper you make here is packaging blood plasma and medical supplies . . . It is packaging and protecting bomb-

sights, compasses and other fitments for planes and ships . . . In at least one great Pacific coast airplane factory it is wrapping the wings and fuselages of great war planes before they are crated for shipment to some fighting front . . . Its treated tissues and waxed surfaces protect the freshness and vitamins of Northwest fruits and Southland citrus and provide sanitary wrappings for thousands of tons of dehydrated fruits and vegetables so necessary to feed the fighting force and also keep our home front fit."

"The ship rudder made in the machine shops in which you work may guide, unerringly, the tanker whose oil supplies arrive in time to save a sea battle . . . The crane you build here may be helping to lift the heel of Hitler and his satellites from the necks of captured peoples . . . The parts of a cargo winch made here may lift ashore precious cargo in far lands to supply your boy or the neighbor boy from down the street . . . The paravane made here might be the means of preventing a torpedo or a mine from destroying an American ship on which some Camas boy may be sailing . . ."

"So you see, gentlemen—and ladies—here in the Camas mill, without fuss, feathers or band concerts—you are in this war up to your necks. You don't share in the glamour or glory of a ship launching . . . You don't have the opportunity to see a bottle of champagne smashed against the bow of a newly launched ship. But without the work you are doing here, some ship would never be launched and thus never reach some theatre of war in time to keep a battle from being lost . . ."

"We have a responsibility to keep alive the human bond of continuous association represented by the service pins you receive tonight. A responsibility to create, through research or suggestion, new products to make their jobs and yours and the future more secure. A responsibility to husband resources in order to finance the modernizing which a post-war period may well demand. A responsibility to maintain through good forest management, an adequate supply of raw materials for tomorrow's products and tomorrow's jobs. A responsibility to operate these plants so capably that investment faith will remain steadfast."

"A responsibility of sending sales missionaries into new fields for orders to keep these wheels turning. And we have a responsibility to put as much as we can of our earnings in war bonds."

"We have the responsibility of assuring these military associates of ours that the tools of this plant have not rusted from lack of use as we produce to keep them supplied. To assure them that memories have not dulled from lack of appreciation of this former association with us, or the fine job they will surely have done in bringing the welcome quietness of peace from out the din of a war-maddened world."

"And if we do not shoulder the responsibility of seeing to it that this human and physical thing of which we speak is held together against the day of their return, then we will indeed be a sorry lot. If we neglect the responsibility of seeing to it that the way back for them will be but a short step from the battlefield to this paper mill and to this association of their families and their fellows, then we will have failed to build solidly the foundation blocks on which to set the security these men fought to attain. And we will have failed in the opportunity we had to hold to the gains of

the past so that we can build together for this better future of which men dream.

"For this is their home. This is the place they will want to come to. You are the people they know the best.

"I am sure these things of which I have talked all have possibilities of fulfillment. In our faith, our planning and our performance we can set the stage for that time of which I am sure you are all thinking:

I pray the day may not be far
When Victory's banners are unfurl'd
And mothers' sons turn home again
As peace dawns in a weary world.
Our harbor gates will swing out wide
As ships sail in from war-toss'd main
To anchor safe at eventide,
And city lights shine forth again.
"Let us return to our jobs with renewed strength and consider what lies ahead as an adventure."

J. D. Zellerbach Talks

● J. D. Zellerbach discussed the wide range of war uses of pulp and paper—from ingredients of gunpowder to food cases—and he pointed out that official circles everywhere are coming more and more to recognize the essential features of the pulp and paper industries.

He spoke proudly of the work of Colonel Alexander Heron in the service of supply in Washington, D. C.—"he's doing the same kind of job for the army he did with us—for one million civilians employed by the army—and it is a compliment to us that we raised him so well."

Of his own work in Washington, Mr. Zellerbach said "I am just one of the many volunteers back there."

He said he was struck by the fact that "out of the 75 pins being awarded tonight, only eight are for five years' service," indicating that longer terms of service were becoming more common. But he pointed his talk to the "ones who are being initiated into this society of ours."

"This corporation began 60 odd years ago with the first mill at Stockton, California," he said. "Some of that machinery was moved to Camas so, it may be said, this is our first mill, still in operation. The paper jobbing business, founded by my grandfather about the same time, grew up with the mill industry. It all ended up as one organization, the Crown Zellerbach Corporation.

Symbol of Family Organization

● "The early founders knew all the people who worked with them," he went on. "When we got larger, a disadvantage was that we couldn't know each other so well. The service pin organization is a substitute for those contacts we miss. This group is, and I hope it will remain to be, a symbol of family organization."

The pin recipients were introduced by Mr. Hanny and Earl Paul, assistant personnel manager. Mr. Zellerbach pinned on the emblems himself and shook hands with each one.

These were Mr. Hanny's introductions of the 35-year pin winners:

William E. Morris—"Main locker room attendant. He worked on the lubricating crew for years. Baled paper in early years. Has a boy in the service."

Tom Poulas—"Paper machine clothing foreman. Changed wires and felts most of his life. Comes in to work any time, day or night."

Francis W. Province—"Fire chief. Was a blacksmith and welder for many years. Was the first president of the pulp, sulphite and paper workers' unions. Was a former mayor of Camas. Has been a member of the mill's work improvement suggestion committee for the past four years."

His introductions for five thirty-year pin winners follow:

Gust Davalis—"Worked in the machine room and in the bag factory. Does the waste job there now."

William M. Kouts—"Construction millwright. A veteran of the last war."

Joe Moravec—"An engineer. Worked at West Linn, Ocean Falls, Floriston, Cathlamet and in the Portland office, besides at Camas."

William T. Newcomb—"A machine tender. Has two boys in the service."

C. Fred Stevey—"Chief electrician. He has invented several control devices. He has patented an automatic load regulator."

Other award winners are as follows:

Twenty-Five Year Pins

● William A. Baller, Lonnie Belz, George H. Chinakos, George Craig, Pete Fertello, William E. Ginder, Tony Klanchar, Joe Martino, Clyde B. McCracken, J. Herman Rickard, Albion W. Rodgers, Oscar C. Rodgers, J. Walter Scott, Walter Williams, William E. Wright, Carl Zollo.

Twenty Year Pins

● Robert L. Barnett, Elmer W. Clark, Milan B. Hill, John G. Hobson, Thomas J. Palmer, Alfred Paris, William G. Powell, Luther W. Pugh, George N. Seeley, Fred Wahl.

Fifteen Year Pins

● John W. Barratt, Edna May Borigo, Donald E. Brown, Olga Brown, Henry E. Burnett, Thomas Herbert Holmes, Melvin Howell, Leona B. Kreshler, Dora E. Lethlean, Emil E. Liedtke, John W. McCole, Mearl McGee, John C. Pollard, Nell B. Richardson, John D. Roberts, Leslie L. Rodgers, Margaret L. Rodgers, Arnold Salmonson, Florence M. Shoemaker.

Ten Year Pins

● Everett E. Arnold, Oliver H. Elliott, Leo Essen, Sigrid S. Gilmer, Robert G.

Mispley, Frederic R. Sievers, Clarence E. Totten.

Five Year Pins

● Merwin T. Beery, Otis S. Cochran, Edwin C. Cooley, Eva M. Edgley, Delia B. Fletcher, Thula M. Johnson, David L. Strickler, Martha P. Wardlow.

Men in Service Receive Pins

● Perhaps the climactic high point of the evening was the final awards of service pins for men in the armed services to their women folk. Their special table was piled high with flowers and Mr. Zellerbach personally made the presentations.

Mrs. Mary Thompson received two pins, each for fifteen years, for her brother, Elmer Buskirk, U. S. Navy, and her son, Wesley E. Sperling, U. S. Army.

Mrs. Millie Jessen received a ten-year pin for her son, Irwin P. Jessen, U. S. Army Air Corps.

Mrs. Jack F. Robertson was given a five-year pin for her brother, James A. Butterick, U. S. Army Air Corps. Another five-year pin went to Mrs. Arthur Irvin, brother of Harold C. Quick, U. S. Navy.

Pins also were awarded to Talbert P. Preuit, for five years, and George W. Richardson, for ten years, but no women relatives were present to receive them. They are both in the Navy.

Value of Armed Guards Is Questioned

● The safety program as it is conducted at St. Helens Pulp and Paper Company, described in the last issue of this magazine, has been commented upon favorably by interested executives at other mills. Many of them pointed out that their mills already had instituted certain features of the St. Helens program.

In regard to another part of the St. Helens arrangements, one personnel director at a large mill raised the question of whether it was advisable for mills to put on armed guards as a wartime measure.

His chief point was that a man or woman toting a weapon draws attention, and that having a few guards posted is not likely to stop any experienced saboteur from entering a plant. The saboteur can find some excuse for getting in, he said, and guards are not going to have much chance stopping him from performing his dirty work.

He also said anyone with a gun employed as a guard is liable to be too itchy-fingered and possibly get into unfortunate trouble needlessly.

He also pointed out that it was difficult to start fires in a pulp or paper plant except in a few places.

His plant, he said, had watchmen who made regular rounds to check up on the mill. But there are no posted guards and none of the watchmen carry weapons of any kind. His idea was that responsible supervisors and foremen would do a better job than any number of guards in protecting a mill.

St. Helens Has Fine Bond Buying Record

● The St. Helens Pulp and Paper Company has been officially recognized as having the best war bond sales record of any large industrial firm in Oregon state, and that goes for every kind of industry.

A letter signed by David W. Eccles, Administrator of the Oregon War Savings Staff, and addressed to Irving T. Rau, secretary-treasurer of the company, said in part:

"I do not know a firm in the state with 500 or more employees which can match the payroll savings record of the St. Helens Pulp and Paper Company. (It has about 600 employees.)

"I intend to brag about this fine record as I journey through the state and challenge the other large industrial firms to match it if they can."

The company has 10.5 per cent of the payroll going into the war savings and is looking forward to unfurling a Treasury T flag, with fitting ceremonies, before February is out.

Mr. Rau is doubly pleased by the record because he also is the war bond sales committee chairman of his county.

Killam Elected To Executive Committee

● In addition to providing all Canada's and most of Britain's war needs of nitrating pulp for manufacture of explosives, Canadian pulp mills are turning out other war essentials, reports Lawrence Killam, president of British Columbia Pulp & Paper Mills, who returned recently to the Pacific Coast after attending the annual meeting of the Canadian Pulp & Paper Association.

Mr. Killam was elected a member of the association's executive committee—the only representative from the West Coast.

Among the war goods produced by the mills are shell containers, packaging for war equipment and parts, boxes for

food and clothing, charts, maps, blueprints, instruction books and stationery for the armed forces. Canadian paper-board, wastepaper and rags are largely employed.

By supplying nitrating pulp Canadian mills have overcome the difficulty of getting sufficient cotton linters for production of nitro-cellulose or gun cotton.

According to information brought out at the meeting, the Canadian industry is supplying the entire requirements of both Canada and the United Kingdom for dissolving pulps for making rayon yarn, staple fibre, plastics, cellophane and allied products.

It was reported that the United States obtains about 75 per cent of its newsprint from Canada and about 1,000,000 tons of various kinds of pulps annually. British newsprint consumption has declined to about 40 per cent of pre-war levels.

The industry is preparing now to meet the problems of this post war era, especially recovery of export markets, but its more immediate problems are those of electric power shortage, newspaper decline, diminished supply of materials and supplies and the likelihood of further rationing of newsprint.

Puget Sound Men Take Police Course

● Eight men of the Puget Sound Pulp & Timber Company organization were graduated from the U. S. Coast Guard Police Training School in Bellingham on January 24th.

The impressive ceremonies were broadcast on a Coast-wide hookup of the Don Lee-Mutual Broadcasting System, with R. E. Cummings of the Coast Guard acting as master of ceremonies. Cummings was the first announcer to tell of the Jap attack on Pearl Harbor, being then on the staff of KGBM of Honolulu.

The men receiving certificates of merit were: H. H. Haugness, D. P. Johnson, E. W. Siefert, Fred Gilmore, Tom Tuthertford, Frank Hedberg, John Engels and Sidney M. Collier.

Supervisors Lead In Longfibre Bowling

● After four weeks' of tournament play in the second half season of the Longview Fibre Company's Bowling League, the Supervisors' team held a narrow lead over the other eight groups. The second half standings as of early February (the season ends April 1) follow:

	Points		Pct.
	W	L	
Supervisors	9	3	.750
Pipefitters	11	5	.688
Mechanics	11	5	.688
Machine Room	8	4	.667
Box Plant	9	7	.563
Office	6	6	.500
Pulp Mill	6	10	.375
Bag Plant	2	10	.167
Control	2	14	.125

The first half season was won by the Pipefitters, with 40 games won and 12 lost. Their high team game of 1075 and high team series scores of 3053 still were tops. Also Vern Retzlaff, Mechanics, still held high individual honors with a 266 game and 687 series.

The Supervisors' team, which held a precarious second half lead, is composed of Bill Clarke, captain; Carl Fahlstrom, Tony Siebers, Vance Roley, Herman Hoehne, Al Parsons and Bud Armstrong. Fahlstrom was high man on the team with a 162 average (21 handicap) and Clarke was next with 156 (26 handicap) and Siebers third with 151 (29 handicap).

Many Women In Fir-Tex Plant

● About forty women have been employed since Pearl Harbor at the Fir-Tex Insulating Board Company at St. Helens, Ore. This comprises about one-fifth of the total employment and, of course, does not count women who already were working in the office and finishing room before war was declared.



LABOR SHORTAGE makes it difficult to hold large banquets in war time. Had it not been for Mrs. KENNETH WEIDMAN (left) and the Parent-Teachers Assoc. of Camas, the Service Pin Dinner could not have been held. Mrs. Weidman, whose husband is a backtender at Camas and a Crown employe for 17 years, took charge as chief dietician and cook and served a tasty home-cooked dinner, assisted by the ladies of the association.

In the center are pictured four ladies who received from President Zellerbach the service pins for their men folks who are in the armed services. Left to right, Mrs. ARTHUR IRVIN, sister of HAROLD QUICK, Navy, 5-year pin; Mrs. MAY THOMPSON, who received two as sister of ELMER BUSKIRK, Navy, 15-year pin, and mother of WESLEY SPERLING, Army, also a 15-year pin; Mrs. JACK F. ROBERTSON, sister of JAMES BUTTERICK, Jr., Army Air Corps, 5-year pin; and Mrs. MILLIE JESSEN, mother of IRWIN JESSEN, Army Air Corps, 10-year pin. There were two other pin awards to men in uniform but no relatives were present. They were: GEORGE RICHARDSON, Navy, 10-year pin; and, TALBERT PREUIT, Navy, 5-year pin.

W. D. "BILLY" WELSH, Public Relations Department, San Francisco, was the principal speaker at the Camas Service Pin Dinner, and he had just told the crowd, "You're in this war up to your necks," when the picture was taken.

Trade Talk



of Those Who Sell Paper in the Western States

Rothschild of Atlas Paper Dies In San Francisco

● San Francisco lost a veteran of 35 years in the paper industry in the sudden death Feb. 5 of Williams Rothschild, president of the Atlas Paper Co.

Born in the city by the Golden Gate 53 years ago, Mr. Rothschild entered the industry at the age of 17 with the Zellerbach Paper Co., and worked his way to the position of sales manager.

He resigned 21 years ago to join Jacob Friedman in the coarse paper business under their combined names, and in 1935 the partnership was incorporated as the Atlas Paper Co. The firm has grown substantially and prospered.

With their two sons in the Army, Mr. and Mrs. Rothschild attended Irving Berlin's "This Is the Army," on Thursday evening, returned to their home at 1700 Broadway, where Mr. Rothschild was stricken with a heart attack and died in the early hours of Friday morning. He had spent a busy day at his office on Thursday.

He is survived by Mrs. Inez Rothschild and their two sons, Sergeant Edward Albert Rothschild, stationed at San Pedro, and Private Leonard William Rothschild, now with the Army at Monterey for assignment.

Samuel Friedman, son of one of the founders of the firm and vice-president of the corporation, also is in the service as boatswain mate in the Navy. With the three ranking heads of the corporation in the service, the business will be operated for the duration by remaining members of the staff.

BM&T San Jose Salesmen Take to Bicycles

● Patriotic paper "pedlars" all, are the salesmen in the San Jose, Calif., branch of Blake, Moffitt & Towne.

Faced with gasoline rationing and a rubber situation which refused to stretch further, the sales staff stored jalopies for the duration, mounted bicycles, and have set out to set a sensible example in war-time selling.

Located in level Santa Clara valley, ideal locale for this modern mode of transportation, several salesmen are covering as much as 20 to 30 miles a day.

Routes have been culled, distant calls cut to a minimum, and manager Floyd L. Willson, himself one of the smiling cyclists, reports that he and his men are finding fun and real relaxation bicycling hither, thither and yon.

Gus Johnson Dies In San Francisco

● With the death of Augustus Johnson in Oakland, California, on January 20 a career that bridged nearly half a century in the paper industry was closed. Nearly two score of his years had been spent in the service of Everett Pulp & Paper Co., chiefly in charge of its San Francisco office.

Born in Philadelphia on August 13, 1875, Gus Johnson became a westerner when his family moved to Tacoma in 1881. He entered Everett employ on October 27, 1895, as a stenographer at the mill at Lowell, Wash. Two years

later he was transferred to the San Francisco office, then under James I. Taylor, as manager.

Advanced to the position of foreign salesman on January 1, 1901, Johnson made several trips to China, the Philippines, Australia, New Zealand, Central and South America. On June 1, 1903, he was appointed to take charge of the order department at the head office in Everett.

Following his election to the assistant treasurer and secretaryship of the company on January 1, 1906, Johnson returned to San Francisco in charge of California sales on June 25, 1908, and maintained the executive post for more than a quarter-century, with broadening territorial jurisdiction, during a period marked by great growth in the business of the pioneer paper manufacturing enterprise. He resigned in December, 1933.

For the succeeding five years Johnson represented eastern concerns, the Fitchburg Paper Co., Champion International, etc., and for a short period was on the staff of Zellerbach Paper Co. in its San Francisco office. Appropriately in consonance with his long service, he returned to Everett employ on June 15, 1939, and was its advisory and sales promotion consultant in San Francisco until the short illness that terminated in death.

Johnson is survived by his widow, the former Lida Weaver, whom he married in Everett at Christmastime, 1897. They had made their home in Oakland for many years. Two sisters, Mrs. Emma Head and Mrs. Agnes Sturges, and a brother, Albert Johnson, also survive him.

High and active in Masonic circles, Johnson was a member of Peninsular Lodge, F. & A. M., of Everett, Wash.; California Commandery, Knights Templar, San Francisco; Scottish Rite Bodies and Islam Temple of the Shrine, Tacoma. Funeral services at the Chapel of the Chimes, Oakland, on January 22, were conducted under Masonic auspices.

Mrs. O'Donnell Elected Officer of Recreation Club

● With women taking over man-sized shifts in war industries, building boats, planes and munitions, it was not amiss that the Recreation Club of the Zellerbach Paper Co., San Francisco, should kick over the traces and break a tradition.

For the first time since its organization, the club now has a woman as vice-president. She is Miss Marie O'Donnell, who won the honor partially because of her great success as hostess recently when Zellerbach employes entertained service men at San Francisco's Hospitality House.

Ray Engrstrom was elected president, succeeding Howard Jones, now in the Army.



CYCLING SALESMEN, or Patriotic Paper "Pedlars." When gasoline rationing hit San Jose, California, the sales staff of BLAKE, MOFFITT & TOWNE decided to do something about it. Bicycles replaced cars for the duration and the smiling quintet, off on 20 to 30-mile jaunts, are (left to right) DEAN COLE, BUDD LEVENBERG, JACK ENGELBRECHT, FLOYD WILLSON and JULES STEPHENS.

Acid Making In the Sulphite Pulp Industry

by A. H. LUNDBERG*

CHAPTER I--Continued

VII. Combustion Calculations

A. Sulphur Burning

Calculations based on 100 lbs. of sulphur.
Atmospheric pressure 760 mm. Hg.

1. Final Gas: 17% SO₂ — 4% O₂ — 79% N₂ (Dry)
Radiation not taken into consideration.
Air (dry) entering 72° F.
Total volume of air entering 6588 cu. ft. S.T.P.
Total weight 533 lbs. (Table IX)
- | | | |
|--------------------------------|----------------------|---------------|
| O ₂ 21 Vol. % | = 1383 cu. ft. ÷ 359 | = 3.85 mols. |
| N ₂ etc. 79 Vol. % | = 5205 cu. ft. ÷ 359 | = 14.50 mols. |
| 100 Vol. % | = 6588 cu. ft. ÷ 359 | = 18.35 mols. |
| O ₂ 23.1 Wt. % | = 123.1 lbs. ÷ 32 | = 3.85 mols. |
| N ₂ etc. 76.9 Wt. % | = 409.9 lbs. ÷ 28.18 | = 14.50 mols. |
| 100.0 Wt. % | = 533.0 lbs. | = 18.35 mols. |

Using Chart II (page 21, January number):

Heat in O₂: 3.85 x (72 — 32) x 6.32 = 973 B.T.U.
Heat in N₂: 14.50 x (72 — 32) x 6.78 = 3932 B.T.U.
4905 B.T.U.

Using Chart III (page 23, January number):

Heat in O₂: 123.1 x (72 — 32) x 0.211 = 1039 B.T.U.
Heat in N₂: 409.9 x (72 — 32) x 0.241 = 3951 B.T.U.
4990 B.T.U.

Heat In Burner Gas

Heat in melted sulphur entering (See
Melting Calculations!) 5652 B.T.U.
Heat in air entering 4905 B.T.U.
Heat of combustion of sulphur 398000 B.T.U.

Total Heat in Burner Gas 408557 B.T.U.

2. Some mills are still feeding raw unmelted sulphur direct to the burners.

Assuming temperature of sulphur 72° F.

Heat In Burner Gas

Heat in raw sulphur 100 x (72 — 32) x
0.178 712 B.T.U.
Heat in air entering 4905 B.T.U.
Heat of combustion of sulphur 398000 B.T.U.

Total Heat in Burner Gas 403617 B.T.U.

3. Assuming air entering 65% saturated and 72° F.
According to Table VI (page 26, January number)
weight of vapor per lb. dry air to saturate is 0.01692
lbs. Thus, 65% = 0.01100 lbs. and the air enter-
ing contains 5.80 lbs. water vapor (533 x 0.01100).

	cu. ft.	S.T.P.
O ₂ 123.1 lbs. ÷ 32.00	= 3.85 mols. x 359	= 1383
N ₂ etc. 409.9 lbs. ÷ 28.18	= 14.50 mols. x 359	= 5205
H ₂ O 5.8 lbs. ÷ 18.02	= 0.32 mols. x 359	= 115
538.8 lbs.	18.67 mols.	6703

Heat in O₂: 3.85 x (72 — 32) x 6.32 = 973 B.T.U.
Heat in N₂ etc.: 14.50 x (72 — 32) x 6.78 = 3932 B.T.U.
Heat in H₂O: 0.32 x (72 — 32) x 8.35 = 107 B.T.U.

Heat in Air 5012 B.T.U.

4. Radiation losses will vary depending on equipment used. Ten to twenty per cent loss in total heat input is common.

Therefore, total heat of the gases leaving the sulphur burner:

Heat in melted sulphur 5652 B.T.U.
Heat in air entering (65% saturated
72° F.) 5012 B.T.U.
Heat of combustion of sulphur 398000 B.T.U.
408664 B.T.U.
Radiation 10% 40866 B.T.U.

Total Heat in Burner Gas 367798 B.T.U.

5. Calculations to find temperature of burner gases.

(a) The gas under condition 1:

SO ₂	200.0 x (0.1430 T + 0.000055 T ²)
O ₂	23.1 x (0.2104 T + 0.000029 T ²)
N ₂	409.9 x (0.2405 T + 0.000035 T ²)
	633.0

SO ₂	0.01100 T ² + 28.600 T
O ₂	0.00067 T ² + 4.860 T
N ₂	0.01435 T ² + 98.581 T

0.02602 T² + 132.041 T0.02602 T² + 132.041 T = 408557 ÷ 1.8Using formula AT² + BT — C = 0—B ± √B² + 4ACT = $\frac{2A}{2A}$

We find T =

$$-132.041 \pm \sqrt{132.041^2 + 4(0.02602 \times 226976)}$$

$$2 \times 0.02602$$

T = 1356° C. = 2473° F.

- (b) The gas under condition 4, where 65% saturated 72° F. air was used and radiation accounted for, will have following temperature:

SO ₂	200.0 x (0.1430 T + 0.000055 T ²)
O ₂	23.1 x (0.2104 T + 0.000029 T ²)
N ₂	409.9 x (0.2405 T + 0.000035 T ²)

As direct cooling is not as yet employed in many mills, Mr. Lundberg's description of direct cooling in a tower packed with inert material will be of interest to sulphite mill operators.

The first part of Chapter I appeared in the January number, pages 18-27.

*Seattle, Washington. Mr. Lundberg is Western Manager, G. D. Jenssen Company, New York City.

$$\begin{aligned} \text{H}_2\text{O} & 5.8 \times (0.4200 T + 0.000185 T^2) \\ \text{SO}_2 & = 0.01100 T^2 + 28.600 T \\ \text{O}_2 & = 0.00047 T^2 + 4.860 T \\ \text{N}_2 & = 0.01435 T^2 + 98.581 T \\ \text{H}_2\text{O} & = 0.00107 T^2 + 2.436 T \end{aligned}$$

$$\begin{aligned} & 0.02689 T^2 + 134.477 T \\ 0.02689 T^2 + 134.477 T & = 367798 \div 1.8 \\ T & = 1218^\circ \text{C.} = 2224^\circ \text{F.} \end{aligned}$$

Checking calculations (a) against Chart II:

$$\begin{aligned} \text{SO}_2 & 3.12 \text{ mols.} \times 14.13 = 44.09 \\ \text{O}_2 & .73 \text{ mols.} \times 8.60 = 6.28 \\ \text{N}_2 & 14.50 \text{ mols.} \times 8.10 = 117.45 \end{aligned}$$

$$\begin{aligned} 167.82 \times (2473 - 32) & = \\ 409649 \text{ B.T.U.} \end{aligned}$$

Checking calculations (b) against Chart II:

$$\begin{aligned} \text{SO}_2 & 3.12 \text{ mols.} \times 13.75 = 42.90 \\ \text{O}_2 & .73 \text{ mols.} \times 8.57 = 6.26 \\ \text{N}_2 & 14.50 \text{ mols.} \times 7.98 = 115.71 \\ \text{H}_2\text{O} & 0.32 \text{ mols.} \times 11.40 = 3.65 \end{aligned}$$

$$\begin{aligned} 168.52 \times (2224 - 32) & = \\ 369396 \text{ B.T.U.} \end{aligned}$$

As noted Chart II gives somewhat higher results, but the difference is very small, less than $\frac{1}{2}$ per cent.

B. Pyrites Burning

Calculations based on 200 lbs. of pyrites, containing 50% S. Atmospheric pressure, 760 mm. Hg.

$$\begin{aligned} 1. \text{ Final Gas:} & 11.00\% \text{ SO}_2 \\ & 6.95\% \text{ O}_2 \\ & 82.05\% \text{ N}_2 \\ & 100.00\% \text{ Gas} \end{aligned}$$

Air (dry) entering at 72°F.

Pyrites entering at 72°F.

Calclines leaving at 1000°F.

Air Volume (Table X) entering 10575 cu. ft. S.T.P.

Gas Volume (Table X) leaving 10182 cu. ft. S.T.P.

Heat Capacities in Kilogram Calories Per Degree Mol.

$$\begin{aligned} \text{FeS}_2 & 10.70 + 0.01336 T \\ \text{Fe}_2\text{O}_3 & 24.72 + 0.01604 T - 423400 \div T^2 \\ \text{Fe}_3\text{O}_4 & 41.17 + 0.01882 T - 979500 \div T^2 \\ T & = ^\circ \text{C.} + 273.1 \end{aligned}$$

(See Table XI and Chart V).

Data from Chemical Engineering Handbook, second edition.

TABLE XI

Heat Capacities at Various Temperatures In Kilogram Calories Per Degree Mol.

$^\circ \text{C.}$	$^\circ \text{F.}$	FeS_2	Fe_2O_3	Fe_3O_4
0	32	14.3	23.42	33.17
100	212	15.8	27.66	41.15
200	392	17.0	30.42	45.69
300	572	18.4	32.62	48.97
400	752	19.7	34.55	51.67
500	932	21.0	36.41	54.08
600	1112	22.3	38.16	56.32
700	1292	23.7	39.88	58.45
800	1472	25.0	41.56	60.51
900	1652	26.4	43.22	62.54
1000	1832	27.7	44.88	64.53
1100	2012	29.0	46.52	66.49
1200	2192	30.4	48.16	68.44

1300	2372	31.7	49.78	70.37
1400	2552	33.0	51.41	72.30
1500	2732	34.3	53.03	74.24

The gangue is assumed to have same sp. heat as Pyrites.

$$\begin{aligned} 200 & \times (10.7 + 0.01336 \times 295) \times (72 - 32) = \\ 119.97 & \end{aligned}$$

976 B.T.U

Heat in Air entering.

$$\begin{aligned} 10575 & \\ 359 & = 29.46 \text{ mols.} \end{aligned}$$

$$\begin{aligned} \text{O}_2 & 21\% = 6.19 \text{ mols.} \times 6.32 = 39.12 \\ \text{N}_2 \text{ etc.} & 79\% = 23.27 \text{ mols.} \times 6.78 = 157.77 \end{aligned}$$

$$\begin{aligned} 100\% & 29.46 \text{ mols.} \quad 196.89 \times (72 - 32) = \\ & 7876 \text{ B.T.U.} \end{aligned}$$

Heat of Formation and Combustion.

It is assumed pyrites is roasted to

$$\begin{aligned} 50\% \text{ Fe}_2\text{O}_3 \text{ and } 50\% \text{ Fe}_3\text{O}_4. \\ 200 \times 2791.2 & = 558240 \text{ B.T.U.} \end{aligned}$$

$$\text{Total Heat Input} = 567092 \text{ B.T.U.}$$

Heat Input

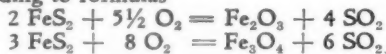
Heat in Pyrites.

Heat Output

Heat in Calcines.

A true FeS_2 contains 46.55% Fe and 53.45% S. 100 lbs. S. therefore holds 87.10 lbs. Fe. Thus, 187.10 lbs. true FeS_2 is roasted. The balance of the 200 lbs. pyrites is gangue.

According to formulas



$$\begin{aligned} 5 \text{ FeS}_2 \text{ gives } \text{Fe}_2\text{O}_3 + \text{Fe}_3\text{O}_4 \\ 5 \times 119.97 & 159.70 \quad 231.55 \end{aligned}$$

$$159.70 + 231.55$$

$$\text{and } 187.10 \text{ lbs. FeS}_2 \text{ gives } 187.1 \times \frac{5 \times 119.97}{5 \times 119.97} =$$

122.0 lbs. Iron Oxides and together with 12.9 lbs. Gangue gives 134.9 lbs. Calcines.

Assuming same sp. heat for the gangue as for iron oxides

$$\begin{aligned} 67.45 & \\ \text{Fe}_2\text{O}_3 & \frac{67.45}{159.70} (24.72 + 0.01604 \times \\ & 423400) \end{aligned}$$

$$811 - \frac{811^2}{67.45} \times (1000 - 32) = 15150 \text{ B.T.U.}$$

$$\begin{aligned} 67.45 & \\ \text{Fe}_3\text{O}_4 & \frac{67.45}{231.55} (41.17 + 0.01882 \times \\ & 979500) \end{aligned}$$

$$811 - \frac{811^2}{67.45} \times (1000 - 32) = 15500 \text{ B.T.U.}$$

Radiation.

$$10\% \text{ of total Heat input} = 56709 \text{ B.T.U.}$$

$$\text{Heat in Gas leaving} = 479733 \text{ B.T.U.}$$

$$\text{Total Heat Output} = 567092 \text{ B.T.U.}$$

Using same formula as under "Sulphur Burning—5" the temperature of the combustion gases leaving is as follows:

Volume of Gas leaving 10182 cu. ft. S.T.P.

$$\begin{aligned} 10182 & \\ 359 & = 28.36 \text{ mols.} \end{aligned}$$

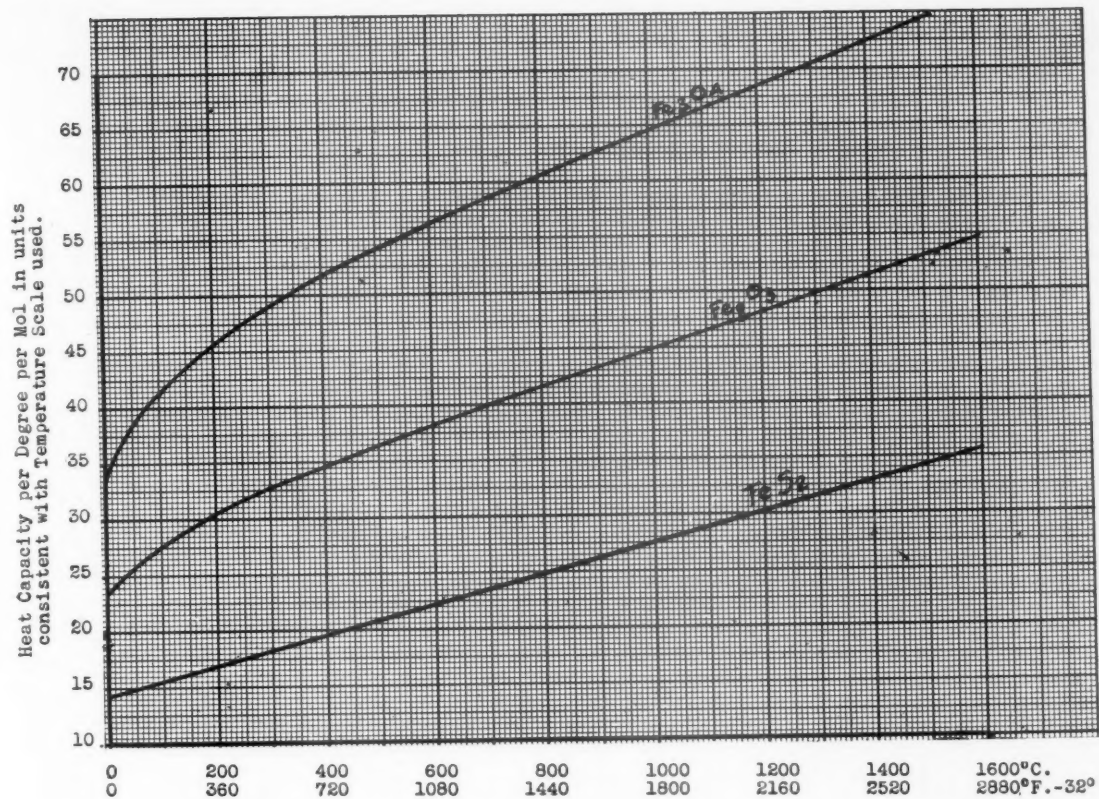


Chart V. Heat Capacities.

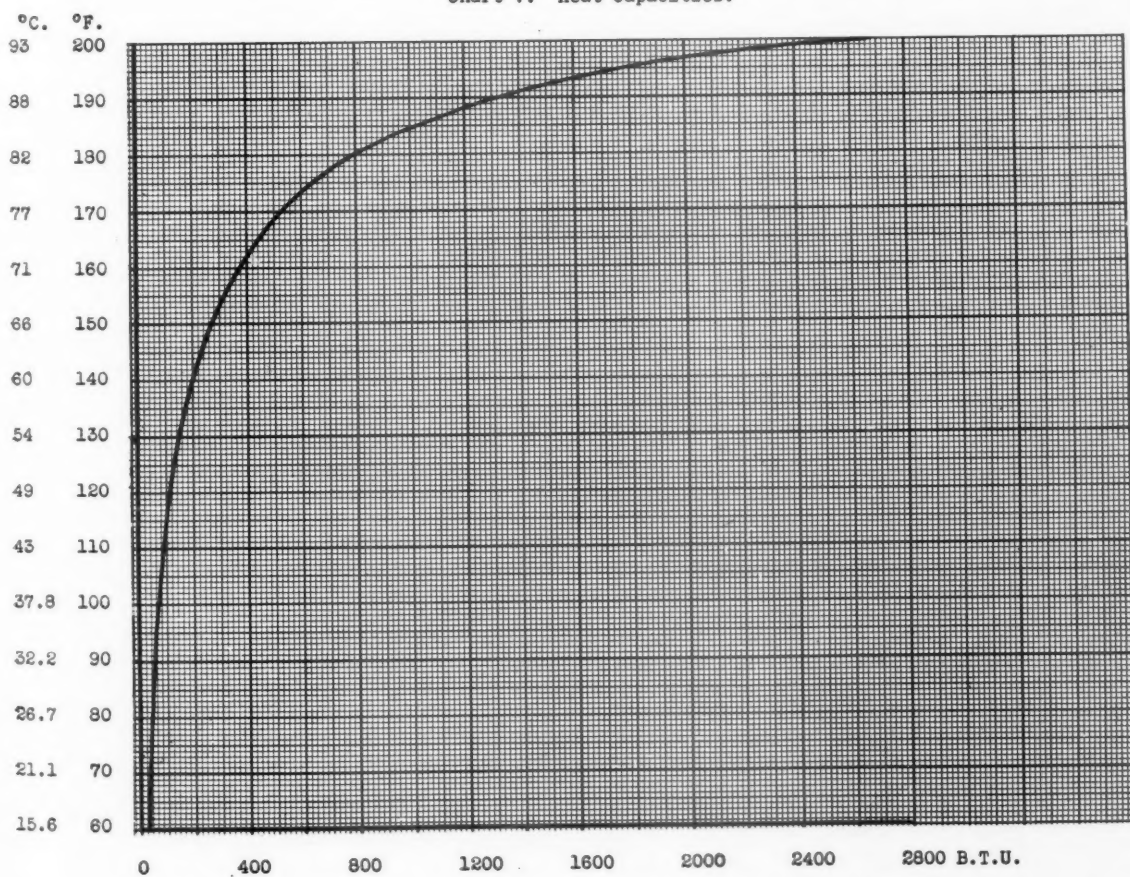


Chart VI. Total Heat in B.T.U. above 0°F. of 1 lb. Dry Air plus Water Vapor to saturate.

SO ₂	11.00 Vol. % = 3.12 mols. x 64.06 = 200 lbs.
O ₂	6.95 Vol. % = 1.97 mols. x 32.00 = 63 lbs.
N ₂	82.05 Vol. % = 23.27 mols. x 28.18 = 656 lbs.
	<hr/>
	100.00 Vol. % 28.36 mols. 919 lbs.

SO ₂	200 x (0.1430 T + 0.000055 T ²)
O ₂	63 x (0.2104 T + 0.000029 T ²)
N ₂	656 x (0.2405 T + 0.000035 T ²)

SO ₂	0.01100 T ² + 28.600 T
O ₂	0.00183 T ² + 13.255 T
N ₂	0.02296 T ² + 157.768 T

$$0.03579 T^2 + 199.623 T$$

$$0.03579 T^2 + 199.623 T = 479733 \div 1.8$$

$$T = 1114^\circ \text{C.} = 2037^\circ \text{F.}$$

This temperature is found to be too high for practical operation. Difficulties, such as clinkering of the calcines, occur at a temperature above 1000° C. (1832° F.) in the roaster.

To control the temperature, part of the cooled burner gases is recirculated. The procedure will be discussed under "Cooling of Burner Gases."

VIII. Cooling of Burner Gases

● Rapid cooling of the Burner Gases is of great importance, especially for reducing sulphur trioxide formation (see Part D, Production of Sulphur Dioxide Gas). Cool gas is also necessary for absorption.

Different cooling systems are in use:

1. Indirect Cooling.
2. Direct Cooling.
3. Combination of Indirect and Direct Cooling.

1. Indirect Cooling

For indirect cooling the gases travel in pipes of suitable material. These pipes are either submerged in water or water sprayed. The most commonly used cooler consists of a combination of both. The gas has a primary cooling in submerged pipes and a secondary cooling in water sprayed pipes. The counter current principle is used. The degree and efficiency depend on temperature of cooling water, velocity of the gas and heat transfer coefficient of material used.

Indirect coolers have the advantage of low sulphur loss but require large ground space. Water consumption is high.

A. Sulphur Burning

Calculations are based on 100 lbs. of sulphur.

Atmospheric pressure 760 mm. Hg.

Gases entering cooler same as under "Combustion Calculations," Part A, paragraphs 3 and 4.

Gases leaving cooler 77° F.

Gases entering cooler thus 6703 cu. ft. S.T.P., weight 638.8 lbs., temperature 1218° C. (2224° F.)

Heat content 367798 B.T.U.

Gas leaving cooler

SO ₂	200.0 lbs. ÷ 64.06 = 3.12 mols.
O ₂	23.1 lbs. ÷ 32.00 = .73 mols.
N ₂ etc.	409.9 lbs. ÷ 28.18 = 14.50 mols.
H ₂ O	5.8 lbs. ÷ 18.02 = .32 mols.
	<hr/>
	638.8 lbs. 18.67 mols.

Heat in SO₂ 3.12 x 9.20 = 28.70

Heat in O₂ .73 x 6.35 = 4.63

Heat in N₂ etc 14.50 x 6.80 = 98.60

Heat in H₂O .32 x 8.36 = 2.68

$$134.61 \times$$

$$(77 - 32) = 6058 \text{ B.T.U.}$$

Heat absorbed in cooler

361740 B.T.U.

PACIFIC PULP & PAPER INDUSTRY

Water requirement.

Temperature of cooling water 50° F.

Temperature of water leaving 86° F.

(86 - 50) X = 361740

X = 10048 lbs. water required.

or 1206 gals. water required.

B. Pyrites Burning

● Calculations are based on 100 lbs. sulphur or 200 lbs. pyrites of 50% sulphur content. Atmospheric pressure 760 mm. Hg.

As noted under "Combustion Calculations" max. temperature allowable of burner gases 1000° C. (1832° F.).

Gases entering cooler same as under "Combustion Calculations," Part B.

Gases leaving cooler at 77° F.

Gases entering cooler thus 10182 cu. ft. S.T.P.

10182

359 = 28.36 mols.

SO ₂	11.00 Vol. % = 3.12 mols. x 13.10 = 40.87
O ₂	6.95 Vol. % = 1.97 mols. x 8.48 = 16.71
N ₂ etc.	82.05 Vol. % = 23.27 mols. x 7.75 = 180.34

100.00 Vol. %	28.36 mols.	237.92 x
		(1832 - 32) = 428256 B.T.U.

Gas leaving cooler

SO₂ 3.12 mols. x 9.20 = 28.70

O₂ 1.97 mols. x 6.35 = 12.51

N₂ etc. 23.27 mols. x 6.80 = 158.24

$$199.45 \times$$

$$(77 - 32) = 8975 \text{ B.T.U.}$$

Heat absorbed in cooler 419281 B.T.U.

Water requirement.

Temperature of cooling water 50° F.

Temperature of water leaving 86° F.

(86 - 50) X = 419281

X = 11646 lbs. water required.

or 1400 gals. water required.

2. Direct Cooling

● Direct cooling is performed in a tower usually packed with inert material. The gas enters at the bottom of the tower and the water through spray nozzles at the top.

Direct coolers require small ground space and have low water consumption. Sulphur consumption is relatively high. To reduce same the tower should be equipped with a heat exchanger.

Direct cooling has a cleaning effect on the gases.

A. Sulphur Burning

a. Without Heat Exchanger

● Properties of gases mixed with saturated water vapors must be taken into consideration in calculations for direct cooling. Reference is therefore made to table VI and chart VI.

Heat in gas entering cooler 367798 B.T.U.

Heat of vaporization 6218 B.T.U.

Total heat in gas 374016 B.T.U.

The maximum temperature possible at the bottom of the cooling tower is found, as follows:

The weight of the dry gas is 633 lbs. corresponding to 533 lbs. dry air.

$$374016$$

$$533 = 701 \text{ B.T.U. per lb. dry gas + Vapor to}$$

saturate, which according to chart VI corresponds to 177½° F.

Gases leaving cooling tower at 77° F. saturated with vapor.

Heat in dry gas leaving cooler
 SO_2 200.0 lbs. = 3.12 mols. x 9.20 = 28.70
 O_2 23.1 lbs. = .73 mols. x 6.35 = 4.63
 N_2 etc. 409.9 lbs. = 14.50 mols. x 6.80 = 98.60

131.93 x
 (77 — 32) = 5937 B.T.U.
 Total heat of vapor to saturate 1 lb. dry air (Table VI) 77° F. = 22.07 B.T.U.
 533×22.07 11763 B.T.U.

Total heat in gas 17700 B.T.U.
 Heat to be absorbed by cooling water:
 $374016 - 17700 = 356316$ B.T.U.

Water evaporated:
 Leaving cooling tower
 (Table VI) $533 \times 0.0202 =$ 10.80 lbs.
 Entering cooling tower 5.80 lbs.

Water evaporated 5.00 lbs.
 Water requirement.
 $374016 + (50 - 32) \times X = (X - 5)(177.5 - 32) + 17700$
 $X = 2800$ lbs. or
 336 gals. water.

Heat Balance

	Input B.T.U.	Output B.T.U.
Heat in Gases and Vapor	374016	17700
Heat in Cooling Water	50400	406716
	424416	424416

Sulphur Loss

● At 177½° F. a 17% SO_2 Gas gives a maximum 0.34% SO_2 solution (See later under "Solubility of Sulphur Dioxide in Water").

2795×0.34
 100 = 9.50 lbs. SO_2

or 4.75% of sulphur burned.

B. Pyrites Burning

a. Without Heat Exchanger

● Data same as under "Indirect Cooling," Part B, with the exception that the gas is assumed to contain 8.5 lbs. of water vapor.

Heat in gas entering cooling tower
 SO_2 3.12 mols. x 13.10 = 40.87
 O_2 1.97 mols. x 8.48 = 16.71
 N_2 etc. 23.27 mols. x 7.75 = 180.34
 H_2O 0.47 mols. x 10.60 = 4.98

242.90 x
 (1832 — 32) = 437220 B.T.U.
 Heat of vaporization 9112 B.T.U.
 Total heat in gas 446332 B.T.U.

b. With Heat Exchanger

● About 90% of above sulphur loss can be eliminated by the use of a heat exchanger and reuse of the water. The size of cooling tower and water consumption, however, will both be increased. An additional 10% water will be used for occasional flushing or cleaning of cooling tower.

Assuming water temperature after heat exchanger to be 68° F. and discharge water to sewer 295 lbs. Water requirement.

$295(177.5 - 32) + X(159.5 - 32) + 17700 =$

$374016 + (300 + X)(50 - 32)$

$X = 2911$ lbs.

and total fresh water requirement 3211 lbs.
 or 385 gals.

Heat Balance (See Flowsheet 1)

	Input B.T.U.	Output B.T.U.
Heat in Gases and Vapor	374016	17700
Heat in Cooling Water	57798	371153
Heat in Discharge Water	-----	42922
	431814	431775

Sulphur Loss

295×0.34
 100 = 1.00 lbs. SO_2

The weight of the dry gas is 919 lbs. corresponding to 819 lbs. of dry air.

446332
 819 = 545 B.T.U. per lb. dry air plus water to saturate, which according to chart VI corresponds to 170° F.

Gases leaving cooling tower at 77° F. saturated with vapor.

Heat in dry gas leaving cooling tower
 SO_2 3.12 mols. x 9.20 = 28.70
 O_2 1.97 mols. x 6.35 = 12.51
 N_2 etc. 23.27 mols. x 6.80 = 158.24

199.45 x
 (77 — 32) = 8975 B.T.U.
 Total heat of vapor to saturate 1 lb. dry air (Table VI) 77° F. = 22.07 B.T.U.
 819×22.07 18075 B.T.U.

Total heat in gas 27050 B.T.U.
 Heat to be absorbed by cooling water
 $446332 - 27050 = 419282$ B.T.U.

Water evaporated:
 Leaving cooling tower
 (Table VI) $819 \times 0.0202 =$ 16.5 lbs.
 Entering cooling tower 8.5 lbs.

Water evaporated 8.0 lbs.
 Water requirement.
 $446332 + (50 - 32) \times X =$
 $(X - 8)(170 - 32) + 27050$
 $X = 3503$ lbs.
 or 420 gals. water.

Heat Balance

	Input B.T.U.	Output B.T.U.
Heat in Gases and Vapor	446332	27050
Heat in Cooling Water	63054	482310
	509386	509360

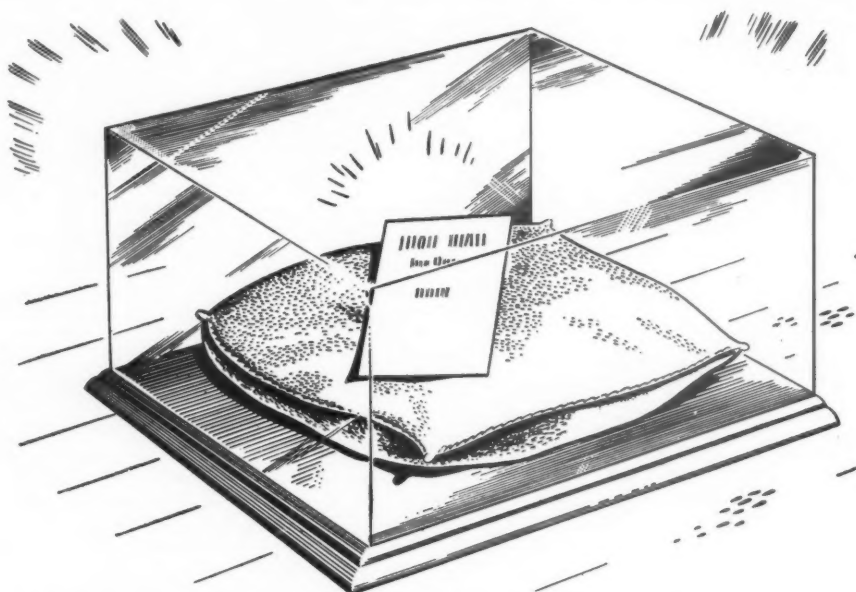
Sulphur Loss

● At 170° F. an 11% SO_2 gas gives a maximum 0.22% SO_2 solution (See later under "Solubility of Sulphur Dioxide in Water").

3495×0.22
 100 = 7.69 lbs. SO_2

or 3.85% of sulphur burned.

ITEM: A Single Sheet of Paper
VALUE: Two Million Dollars



To you in the pulp and paper industry, this may sound like a tall tale — unless you have at some time had just such a sheet of paper in your hand when the need for it arose. What is it? Just an ordinary piece of paper — but on it are printed words which, in case of loss or damage to your property, are as valuable as the business which it serves — if your insurance has been properly written and handled.

Cosgrove & Company, Inc., an insurance brokerage firm with many clients in the pulp and paper industry, has made this field one of continuous study and analysis over a period of years. Thus we have

the complete knowledge essential to advising the necessary coverages for proper and adequate protection under today's rapidly-changing conditions. With our broad facilities and staff of experts, we are thoroughly equipped to buy, for you, the contracts you need at present, and to keep pace with your needs of the future.

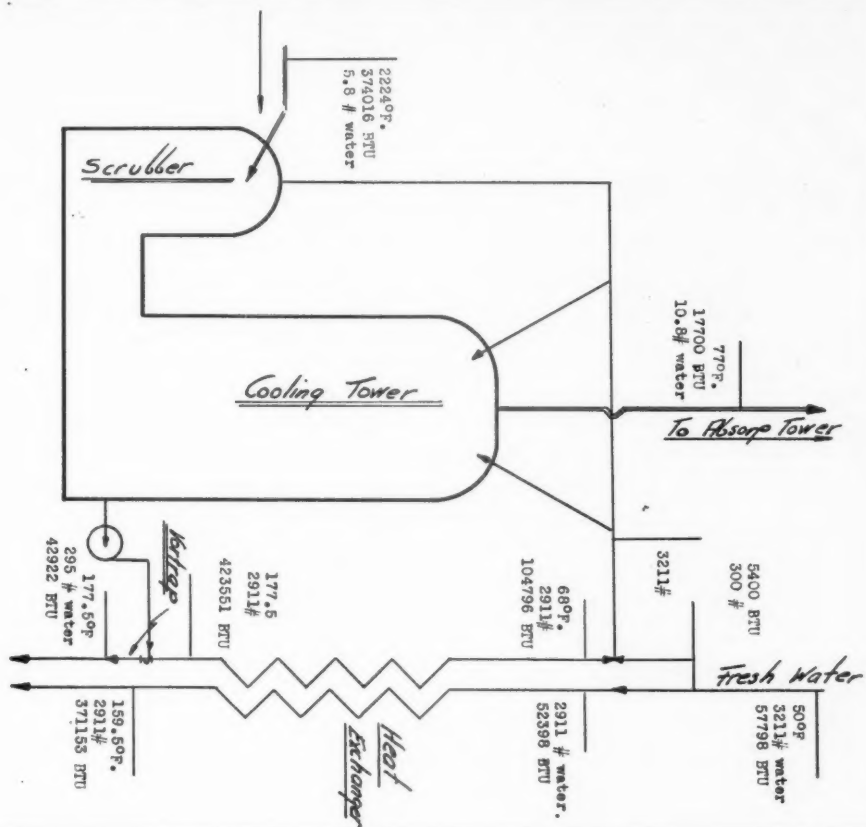
Add to this the ability to secure the most advantageous rates, and constant attention to every detail of our clients' policies, as well as a complete accident prevention and safety engineering department, and you have the essential factors of Cosgrove & Company, Inc. unexcelled service.

COSGROVE & COMPANY Inc.

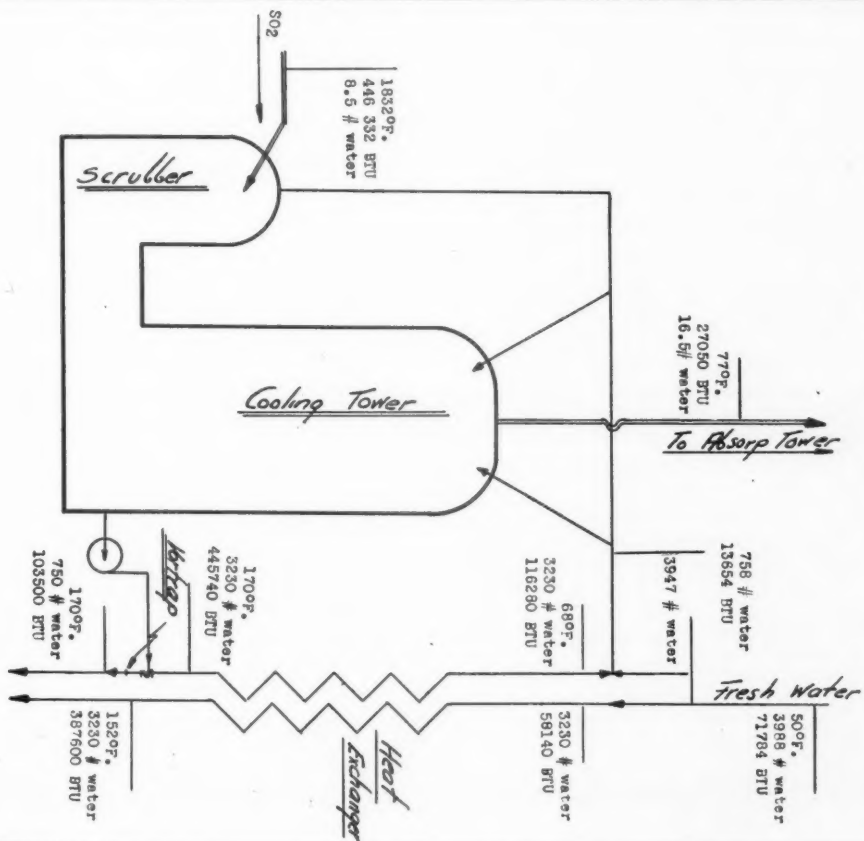
Insurance Brokers • Average Adjusters

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Flow Sheet # 1

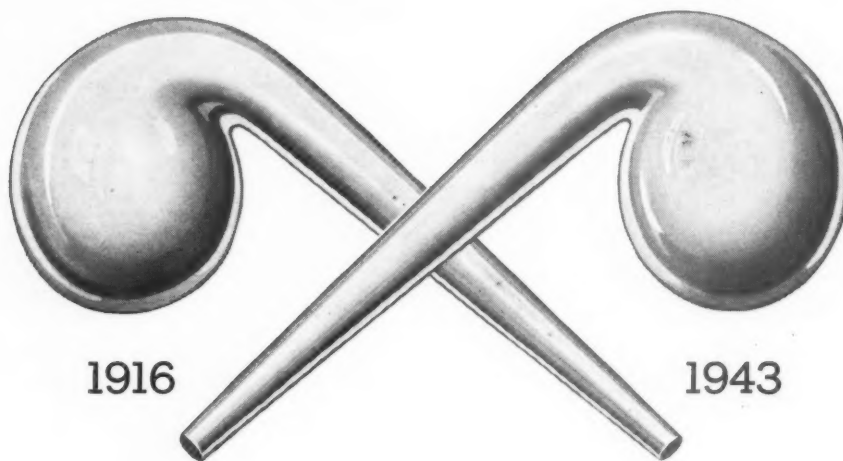


Flow Sheet # 2

A

Veteran in Chemical Service

FOR WEST COAST INDUSTRIES



For more than a quarter century Great Western has enjoyed a reputation as the dependable source of chemical supply for Western Industry. Recent additions to Great Western Division, The Dow Chemical Company's West Coast plants, admirably fit production facilities to the job of supplying the increased demand for indispensable chemicals. Today Dow's Great Western Division is the largest chemical manufacturing concern of its kind in the West.

Thus the availability factor has been added to recognized high quality and uniformity of BEAR BRAND and DOW Industrial Chemicals, Compressed Gases, Organic Solvents and Flotation Reagents. As a result all western industries now find adequate supplies of these chemicals located virtually on their doorstep—a decided advantage, especially during these days when all transportation facilities are so urgently needed by our armed forces.

GREAT WESTERN DIVISION • THE DOW CHEMICAL COMPANY
 Seattle SAN FRANCISCO, CALIFORNIA, U. S. A. Los Angeles

BEAR BRAND CHEMICALS

MANUFACTURED FOR WEST COAST INDUSTRIES

INDUSTRIAL CHEMICALS

Ammonium Chloride	Ferric Chloride
Aqua Ammonia	Hexachlorethane
Canners' Soda	Methyl Bromide
Caustic Potash	Muriatic Acid
Caustic Soda	Zinc Hydrosulphite

ORGANIC SOLVENTS

Carbon Tetrachloride	Methylene Chloride
Chloroform	Methyl Chloride

COMPRESSED GASES

Chlorine Anhydrous Ammonia Sulphur Dioxide

FLOTATION REAGENTS

Z-3 Potassium Ethyl Xanthate	Z-8 Potassium Secondary Butyl Xanthate
Z-4 Sodium Ethyl Xanthate	Z-9 Potassium Isopropyl Xanthate
Z-5* Potassium Amyl Xanthate	Z-10 Potassium Hexyl Xanthate
Z-6* Potassium Pentasol Amyl Xanthate	

*From Sharples Amyl Alcohol



DOW

TRADE MARKS
 REG. U. S. PAT. OFF.

b. With Heat Exchanger

● When burning pyrites a considerable amount of calcines is always carried over from the combustion chamber. The amount varies in relation to the fineness of the pyrites burned. These calcines are eliminated continuously from the cooling tower by means of a Vortrap (See flow sheets 1 and 2). Consequently, a larger amount of extra water is required than for sulphur burning.

Assuming water temperature after heat exchanger to be 68° F. and discharge water to sewer 750 lbs. Water requirement.

$$750(170 - 32) + X(152 - 32) + 27050 = 446332 + (758 + X)(50 - 32)$$

$$X = 3230 \text{ lbs.}$$

and total fresh water requirement 3988 lbs.
or 478 gals.

Heat Balance
(See flow sheet 2)

	Input B.T.U.	Output B.T.U.
Heat in Gases and Vapor	446332	27050
Heat in Cooling Water	71784	387600
Heat in Discharge Water	-----	103500
	518116	518150

Sulphur Loss

$$\frac{750 \times 0.22}{100} = 1.65 \text{ lbs. SO}_2$$

or 0.83% of Sulphur burned.

3. Combination of Indirect and Direct Cooling

● Any number of combinations are possible from the extreme of only partial saturation in the direct cooler to the production of steam from indirect cooling.

A. Sulphur Burning**a. Complete Saturation in Direct Cooler Followed by Indirect Cooling**

● Calculations based on 100 lbs. sulphur. Atmospheric pressure 760 mm. Hg.

Same type of gas and conditions as under "Direct Cooling," Part A.

Step 1. Saturation

Heat in Gas and Vapor entering 374016 B.T.U.
From previous calculations the saturation temperature was found to be 177½° F. From Chart I 1 lb. air holds .585 lbs. water; thus, 533 lbs. air holds 312 lbs. water. The incoming gas already holds 5.8 lbs. Consequently, 306.2 lbs. fresh water required.

Heat in fresh water 306.2(50 — 32) 5512 B.T.U.

Total heat of gas leaving 379528 B.T.U.

Step 2. Indirect Cooling

Total Heat of Gas entering 379528 B.T.U.
Total Gas leaving, 77° F., saturated 17700 B.T.U.

Heat to be absorbed in Cooler 361828 B.T.U.

Water requirement.

Temperature of cooling water 50° F.

Temperature of water leaving 86° F.

$$(86-50) \times X = 361828$$

$$X = 10051 \text{ lbs.}$$

$$\text{or } 1207 \text{ gals.}$$

The water added for saturation will condense in the cooler.

At 177½° F. the gas holds 312 lbs. water
At 77° F. the gas holds 10.8 lbs. water

Water condensed 301.2 lbs.

This water will hold an appreciable amount of SO₂ and should therefore be collected and reused for saturation.

This method is recommended only where present cooling system is inadequate for quick cooling of the gases.

b. Indirect Cooling by Waste Heat Boiler, Followed by Either Indirect or Direct Cooling**Step 1. Boiler**

● It is recommended that to hold corrosion at a minimum and to keep the size of the boiler within an economical unit, that the temperature of the leaving gases is kept at about 660° F.

Thus, gases entering boiler 2224° F.
gases leaving boiler 660° F.

Heat in gases entering boiler 367798 B.T.U.

Heat in gases leaving boiler

SO₂ 3.12 mols. x 10.65 = 33.23

O₂ .73 mols. x 7.95 = 5.80

N₂ etc. 14.50 mols. x 7.08 = 102.66

H₂O .32 mols. x 8.80 = 2.82

$$144.51 \times$$

$$(660 - 32) = 90752 \text{ B.T.U.}$$

$$277046 \text{ B.T.U.}$$

Assuming a 3% radiation loss
on heat input

$$11033 \text{ B.T.U.}$$

Heat available for steam 266013 B.T.U.

Assuming feed water of 212° F. is available.

Steam Pressure wanted 125 lbs. G.P.

$$266013$$

$$990 = \text{approx. } 269 \text{ lbs. of steam}$$

or approx. 2.69 lbs. of steam per lb. sulphur.

Step 2. Alt. 1. Indirect Cooling

Heat in gas leaving boiler 90752 B.T.U.

Heat in gas leaving cooler 6058 B.T.U.

Heat to be absorbed in cooler 84694 B.T.U.

Water requirement.

$$(86 - 50) \times X = 84694$$

$$X = 2353 \text{ lbs.}$$

$$\text{or } 282 \text{ gals.}$$

Alt. 2. Direct Cooling

Heat in gas leaving boiler 90752 B.T.U.

Heat of Vaporization 6218 B.T.U.

Total heat in gas

$$96970$$

$$= 182 \text{ B.T.U. per lb. dry}$$

$$533$$

gas plus vapor to saturate, which according to Chart VI corresponds to 140° F.

Heat in gas leaving cooler 17700 B.T.U.

Heat to be absorbed in cooler 79270 B.T.U.

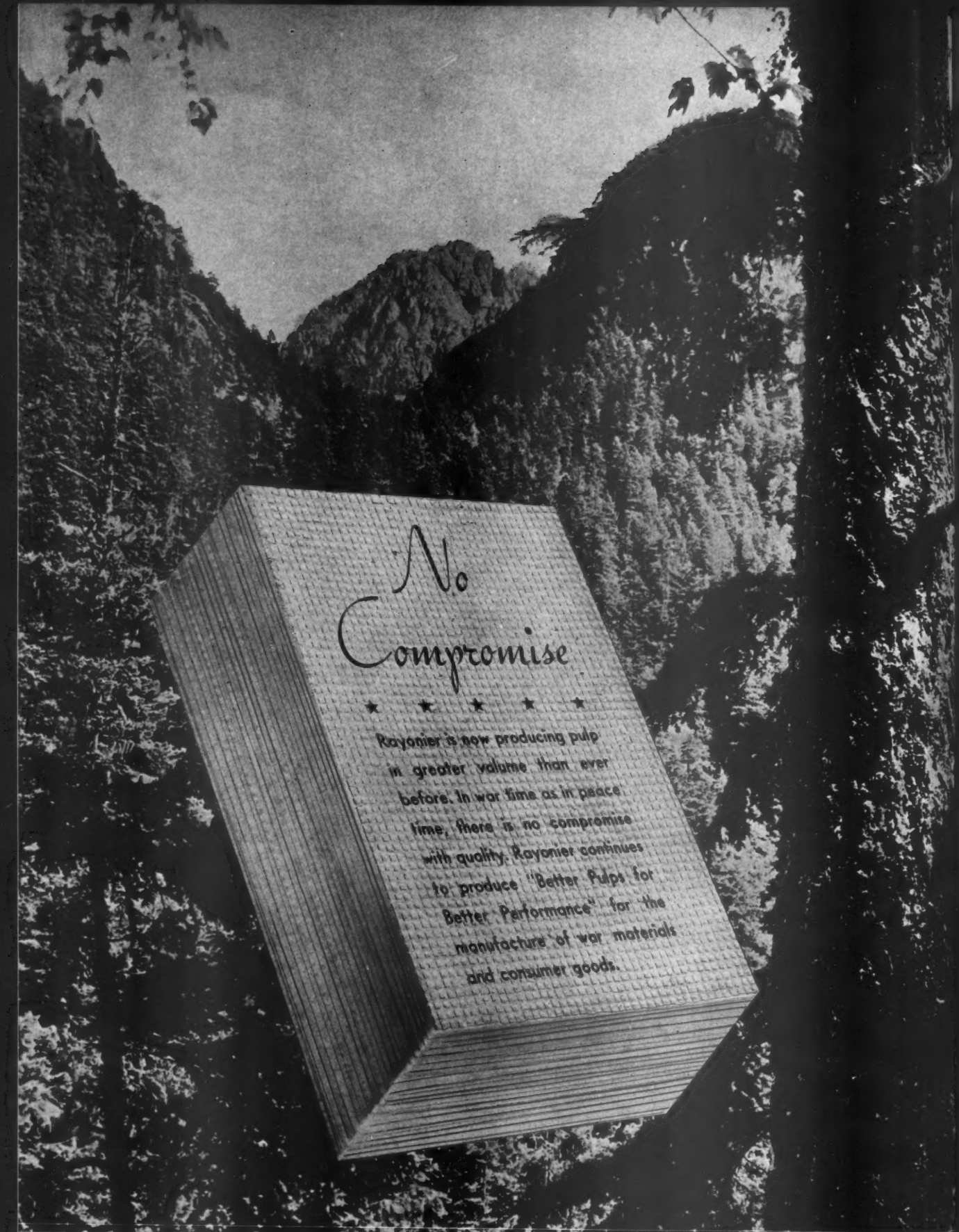
Water requirement.

$$79270 + (50 - 32) \times X =$$

$$(X - 5)(140 - 32) + 17700$$

$$X = 690 \text{ lbs.}$$

$$\text{or } 83 \text{ gals.}$$



No Compromise

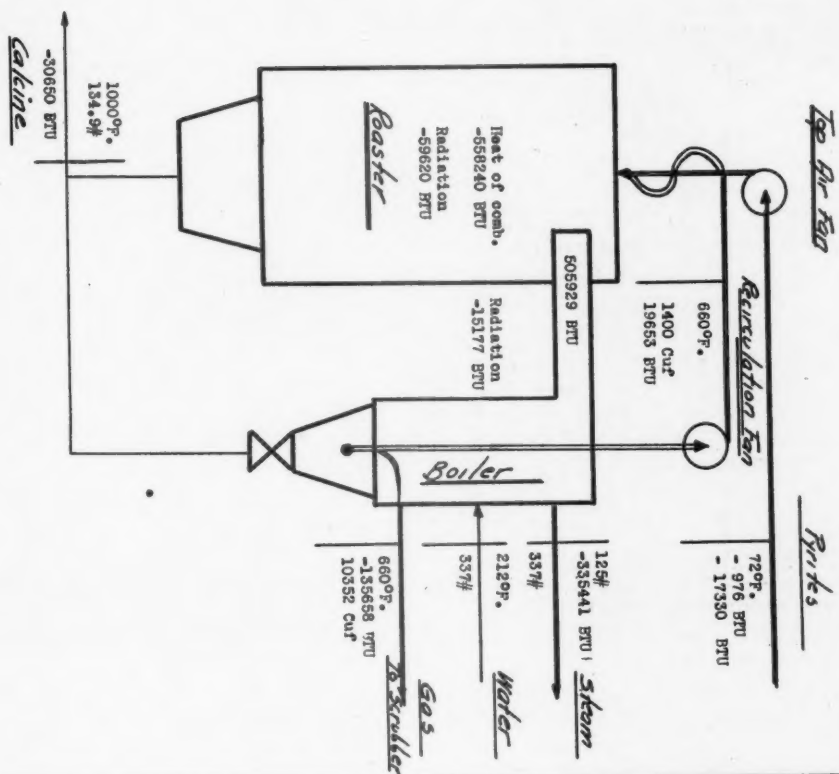


Rayonier is now producing pulp
in greater volume than ever
before. In war time as in peace
time, there is no compromise
with quality. Rayonier continues
to produce "Better Pulp for
Better Performance" for the
manufacture of war materials
and consumer goods.

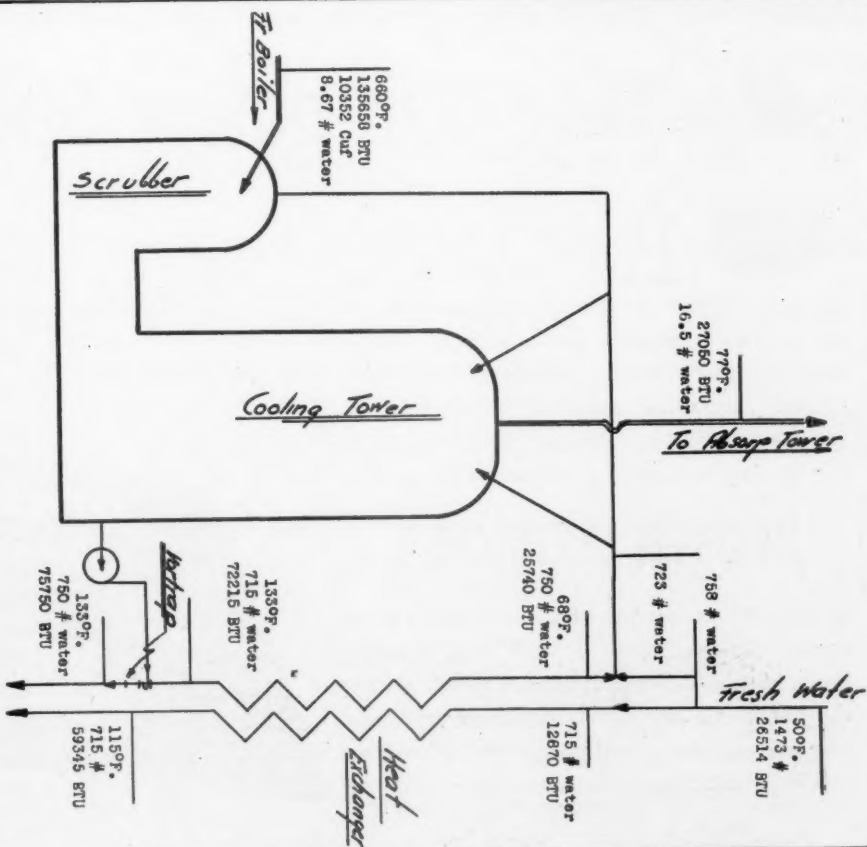
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San Francisco • Sales: 122 East 42nd Street, New York




Flow Sheet # 3



Flow Sheet # 4



Meeting Man-power Shortages

 **I**NDUSTRY'S serious problem, man-power shortage, can be mitigated by paying extra attention to methods and materials. In the pulp and paper industry, for example, chemicals with fully known properties conserve man-power by avoiding trouble in digesting, bleaching, coating, tinting and other processes. That is why

HOOKER CHEMICALS

have long been the year-after-year choice of so many successful mills. HOOKER Caustic Soda, Liquid Chlorine and other chemicals for the paper industry have established new high standards of purity and uniformity. The same quality guards your interests today when so

much depends on your ability to produce predictable results every time. And now, as always, HOOKER paper specialists are available for help in solving chemical problems of the paper industry.



Sulphur Loss

$$\frac{0.57}{100} \times 690 = 3.93 \text{ lbs.}$$

or 1.96% of sulphur burned,
which also can be reduced by the use of a heat exchanger.

B. Pyrites Burning

● Indirect cooling in waste heat boiler followed by direct cooling.

This is the method used in the American mills roasting pyrites, and it will therefore be fully discussed.

Under "Combustion Calculations" Part B, is mentioned that, if not controlled, the temperature in a Flash Roaster would go too high for practical operation. To control the temperature a gas recirculating system is used. Part of the gas leaving the boiler is returned to the roaster. The amount is regulated to keep the roaster temperature at a maximum temperature of 1832° F. (1000° C.).

Flow sheets 3 and 4 give a good picture of the working of the system.

Data

Calculations based on 200 lbs. pyrites containing 50% sulphur.

Atmospheric pressure 760 mm. Hg.

Air entering roaster 72° F., 60% saturated.

Final gas (dry) SO_2 11.00%
 O_2 6.95%
 N_2 etc. 82.05%

100.00%

Pyrites enters roaster (dry state) at 72° F.
 Calcines leave roaster at 1000° F.
 Gas leaves roaster at 1832° F.
 Gas leaves boiler at 660° F.
 Gas returning to roaster at 660° F.
 Gas (saturated) leaves roaster at 77° F.
 Radiation loss roaster 10% of heat input
 Radiation loss boiler 3% of heat input

Roaster Heat Balance

Heat in Pyrites (See "Combustion Calculations") 976 B.T.U.

Heat in air entering

Air volume (Table X) 10575 cu. ft. S.T.P.

Air weight (Table X) 854 lbs.

Weight of vapor per 1 lb. dry air to saturate at 72° F. (Table VI) 0.01692 lbs.

Weight of vapor in gas

854 x 0.01692 x .60 = 8.67 lbs.

O_2 6.19 mols. x 6.32 = 39.12

N_2 etc. 23.27 mols. x 6.78 = 157.77

H_2O .48 mols. x 8.35 = 4.01

200.90 x

(72 - 32) = 8036

Heat of vaporization 9294 17330 B.T.U.

Heat of Combustion and Formation 558240 B.T.U.

Heat in Recirculating Gas

Gas volume 1400 cu. ft. S.T.P.

660° F. = 3.90 mols.

(660 - 32) = 18495

SO_2 10.82% = .42 mols. x 10.65 = 4.47

O_2 6.84% = .27 mols. x 7.95 = 2.15

N_2 etc. 80.69% = 3.15 mols. x 7.08 = 22.30
 H_2O 1.65% = .06 mols. x 8.80 = .53

100.00% 3.90 mols. 29.45 x

Heat of vaporization 1158 19653 B.T.U.

Total heat input 596199 B.T.U.

Heat in Calcines 30650 B.T.U.

Radiation, 10% of heat input 59620 B.T.U.

Heat in gas leaving 505929 B.T.U.

Total heat output 596199 B.T.U.

Checking Temperature of Gas Leaving:

10352 + 1400 = 11752 cu. ft. S.T.P. = 32.74 mols.

SO_2 10.82% = 3.54 mols. x 13.10 = 46.37

O_2 6.84% = 2.24 mols. x 8.48 = 19.00

N_2 etc. 80.69% = 26.42 mols. x 7.75 = 204.76

H_2O 1.65% = .54 mols. x 10.60 = 5.72

100.00% 32.74 mols. 275.85 x

(1832 - 32) = 496530 B.T.U.

Heat of vaporization 10452 B.T.U.

506982 B.T.U.

Boiler Heat Balance

Heat in gas entering boiler 505929 B.T.U.

Radiation loss 3% of heat input 15177 B.T.U.

490752 B.T.U.

Heat in Gas Leaving Boiler

11752 cu. ft. S.T.P. 660° F. = 32.74 mols.

SO_2 10.82% = 3.54 mols. x 10.65 = 37.70

O_2 6.84% = 2.25 mols. x 7.95 = 17.81

N_2 etc. 80.69% = 26.42 mols. x 7.08 = 187.05

H_2O 1.65% = .54 mols. x 8.80 = 4.75

100.00% 32.74 mols. 247.31 x

(660 - 32) = 155311 B.T.U.

Heat available for steam 335441 B.T.U.

Assuming boiler feed water of 212° F. is available and a steam pressure of 125 lbs. G.P. is wanted.

335441

= approx. 337 lbs. of steam is produced

990

or approx. 3.37 lbs. of steam per lb. available sulphur

or approx. 1.68 lbs. of steam per lb. pyrites (50% S.)

Direct Cooler Balance (Heat Exchanger Used)

Heat in Gas entering cooler,

155311—19653=135658 B.T.U.

Weight of dry gas, 919 lbs. corresponding to 819 lbs. dry air.

135658

= 165 B.T.U. per lb. saturated gas.

819

Thus, maximum temperature at bottom of cooling tower 133° F. (Chart VI).

Gas leaves cooler at 77° F. saturated with vapor.

Heat in gas leaving cooler

SO_2 10.82% = 3.12 mols. x 9.20 = 28.70

O_2 6.84% = 1.97 mols. x 6.35 = 12.51

N_2 etc. 80.69% = 23.27 mols. x 6.80 = 158.24

199.45 x

(77 - 32) = 8975 B.T.U.

Total heat of vapor to saturate

(Table VI — 77° F.) 819 x 22 C7. 18075 B.T.U.
 27050 B.T.U.
 Heat to be absorbed in cooler,
 135658 — 27050 = 108608 B.T.U.
 Water evaporated:
 Leaving cooling tower, 819 x 0.0202 = 16.5 lbs.
 Entering cooling tower 8.67 lbs.
 Water evaporated 7.83 lbs.
 Water requirement.
 Fresh water temperature 50° F.
 Cooling water leaving heat exchanger 68° F.
 Water discharge to sewer 750 lbs.
 $750(133 - 32) + X(115 - 32) + 27050 =$
 $135658 + (757.83 + X)(50 - 32)$
 $X = 715$ lbs. of water
 Total fresh water requirement 1473 lbs.
 or 177 gals.

Sulphur Loss

750×0.43
 100 = 3.22 lbs. SO₂
 or 1.61% of sulphur burned.

Total Heat Balance

Input	
Heat in Pyrites entering roaster	976 B.T.U.
Heat in Air entering roaster	17330 B.T.U.
Heat of Combustion and Formation	558240 B.T.U.
Heat in Fresh Water for cooling	26514 B.T.U.
	603060 B.T.U.
Output	
Heat in Calcines leaving roaster	30650 B.T.U.
Heat in Gas leaving cooling tower	27050 B.T.U.
Heat in Water to sewer	75750 B.T.U.
Heat in Water leaving heat exchanger	59345 B.T.U.
Roaster Radiation loss	59620 B.T.U.
Boiler Radiation loss	15177 B.T.U.
Steam produced	335441 B.T.U.
	603033 B.T.U.

Mr. Lundberg's article will be continued
 in the March number

"THE FIGHTER FAMILIES' FRONT"

A Call to Arms to Parents, Wives and Sweethearts of Men on the Battle Fronts

By Dr. HERBERT E. COE,
 Lt. Com., U. S. N. R. (Ret.) Seattle

THE following letter has been received by the Publisher of Pacific Pulp & Paper Industry from Dr. Herbert E. Coe, Lt. Com., U.S.N.R. (Ret.), who explains that he has sent it to one thousand parents and near relatives of men on the battlefronts. Dr. Coe has a son, Robert C., Lieut. (jg), in command of a sub-chaser on the Atlantic at the present time and also a nephew, James C. Dexter, Lieut. (jg), who is reported missing in the flying service in the Far East, and another nephew, Frantz E. Coe, lieutenant in the Army. The doctor, himself, was associated with the publisher of this magazine in the Navy during World War No. 1. He therefore speaks from experience and acts from his heart in proposing "The Fighter Families' Front," which the Pacific Pulp & Paper Industry heartily endorses as worthy of nation-wide support:

Capt. Miller Freeman,
 U.S.N.R. (Ret.),
 Seattle, Washington

Dear Sir:

This letter is sent to you because members of our families—yours and

mine—are in the fighting forces of our country.



Dr. HERBERT E. COE, Originator and author of the "Fighter Families' Front" plan.

The second front has come, but we need a triple front, and we can organize the third front here, The

Fighter Families' Front. The plan for this front follows. Please read it carefully.

This idea has met with such universal approval among those to whom it has been submitted that the time seems ripe to extend it over our entire country. You are one of one thousand persons selected to receive this letter and to start this Third Front.

We can be a powerful force if thousands of us throughout our country are working at all times in hundreds of ways to keep supplies going at top speed to our men on the fighting fronts, and if we know that thousands of Triple F's are all working to the same end. You and I must do it—we cannot pass the buck if our men are to win this war and come home to us. Start Triple F's everywhere—in offices, plants, homes, unions, neighborhood clubs—start them thinking, talking, acting, at once. Let your congressmen and your editors know of the Triple F's and what we are doing. They will be interested.

Let me know your reaction by answering these three questions.

(1) Does the plan seem practical?

- (2) If not, why?
 (3) Will you start spreading the plan at once as widely as possible?
 Yours for a powerful, vital, effective Fighter Families' Front,

H. E. COE, Chairman,
 1008 Summit Avenue,
 Seattle, Wash.

Summary of the Plan

As our armed forces move forward from the defensive to the offensive type of warfare they need a greatly increased amount of supplies and war materials. These must be produced. In spite of the splendid results of our war effort to date, instances still occur of interference with the production of these materials or failure to produce them in the greatest possible amount. This lag in production is often difficult to control from executive offices. Valuable assistance can be rendered if the problems are approached at the points where these lags occur, whether in the shop, in the planning department, or in the executive office, and approached from many angles by persons who are vitally interested.

There must be no slowing, no interruption, no delay in the production or transportation of war materials to our men, for the lack of these materials at a critical moment will mean that your man or mine will not return.

Practically all interference with the war effort is due to the placing of self-interest—either of a person or of a group—above the national welfare. This self-interest on the part of the few can be overcome by the powerful and constant personal interest on the part of the many whose overwhelming desire is to end this war as quickly as possible. Our interest—to win the war and return our men to our homes—is identical with the welfare of the nation, because we are the nation, we are America. We need no stimulation, no continuing ballyhoo; we have his letters or his memory.

How to motivate this powerful, vital interest, how to give it effective expression is the object of this plan. The plan must be simple, direct, appealing, and have a name which arrests the attention.

The Name: The Fighter Families' Front.

The Plan: Call four persons together and form a Fighter Families' Four, a Triple F.

Sole Object: Uninterrupted, maximum production and transportation

of war materials for your man and mine in order to:

1. Protect him with an abundance of supplies.
2. Return him to us safely, or in the event of his injury or death to
3. Avenge him by supplying his comrades with unlimited fighting materials, and
4. Eliminate those enemies responsible for his loss.

Membership Qualifications: A member of the immediate family—husband, father, brother, son—in the armed forces here or on the fighting front—not on the swivel chair front.

Organization:

1. Small groups, not more than five persons.
2. No paid executives or organizers.
3. Spread by personal, spoken instruction, and earnest conviction.
4. No national or regional organization.
5. No overhead expense or dues.
6. As non-partisan as a Nazi torpedo or a Jap bomb.

Reasons for small groups:

1. Independent action suited to local conditions.
2. No domination by minorities or special interests.
3. No large pressure groups, controlled or directed.
4. Minimum opportunity to sabotage the plan.
4. Be on the alert for every means of improving or increasing production, and watch vigilantly for every slow-down or delay.
5. Watch for any condition in your neighborhood which can be so corrected or improved as to aid the war effort or assist in the protection of our men.
6. Call your Triple F together frequently to discuss conditions and ideas, plan appropriate action, and act at once.

Suggested Actions:

5. Cooperation between groups when desirable.

What to do:

1. Form Triple F's everywhere as rapidly as possible, being sure to include wives, mothers, sisters.
2. Keep membership strictly to members of immediate families of fighters; others may help but under some different name.

3. Keep activities directly intensive and strictly to our Sole Object.

(Editor's Note—Under this heading the author makes a number of constructive suggestions as to how action can be taken at once and outlines more fully the functions of the organization. He would like to have these letters and further details in the hands of those who are interested in this patriotic and humanitarian movement and will appreciate inquiries at the address given at the foot of his letter.)

* * *

Editor's Comment: When writing your congressmen about matters you think should be corrected, do not be abusive. Congressmen are human and have their faults, but without congress we would soon have complete dictatorship. Citizens should encourage vigilant, militant action by congressmen and other government officials to exert their full powers to correct conditions obstructive to the war effort.

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Sidney Roofing Urges Collection of Waste

● Sidney Roofing & Paper Company, headed by R. W. Mayhew, with mills at Victoria, B. C., is devoting considerable advertising space these days to encourage business and industrial organizations to save waste paper and rags.

These products, says Mr. Mayhew, are in great demand for national defense programs and salvage of waste paper and rags is an important job that everyone can share.

The company does not undertake to buy the salvage, but merely urges its collection.

Camas Girls' Team Winning In Basketball League

● Up to mid-February the girl's basketball team of the Camas mill of the Crown Willamette Paper Company, Division of Crown Zellerbach Corporation, had won all their games in the Portland Girls' League, seven straight. All of the girls are working or have worked in the mill and were furnished equipment and uniforms by the mill management.

Members of the Camas team include: Irene Buhman and Sally Stenehjem of the finishing room; Margaret Falser, who was lost to the team in early February when she enlisted in the WAACS; Olive Jacobson, Captain; Idella Evanson, Lorraine Holter, Eleanor Evanson, and Opal Holter, bag factory employees; Sybil Shirley, Edith Frewing, Nadine Hoard and Helen Strain, coach.

No Immediate Change Expected In Newsprint Price

● Although when Donald Gordon, chairman of Canada's Wartime Prices and Trade Board, came west to Vancouver a few days ago, he was fresh from a Washington conference at which he discussed newsprint prices with United States officials of the War Production Board and Canadian Newsprint Administrator R. L. Weldon, he was unable to throw much new light on the subject.

General impression is that no immediate change in the price setup is likely.

However, the discussions at Washington at least had the benefit of fairly complete data bearing on Canadian costs of production—something which most of the mill operators have been reluctant to divulge in the past.

Attitude of Office of Price Administration has been that a price increase might be justified, but the mills should "prove" their case. Mr. Gordon indicated that while he is opposed to any move that might interfere with the war against inflation a rise in price might be effected through government subsidy rather than additional burden on the consumers of newsprint.

It has been customary to revise newsprint prices on a quarterly basis, although present schedules have been in force since the beginning of 1938. The expectation at Ottawa and in Vancouver is that present prices will continue for the second quarter of 1943 regardless of what may be done later in the year.

Cost of production and transportation have advanced several dollars a ton since the beginning of the war, although Canadian mills have had the advantage of the premium on U. S. exchange in sales to the American market. Guesses as to the probable increase—when it comes—range all the way from two dollars to ten dollars a ton.

Publishers' costs have increased, too, and their problems have been further complicated by rationing. Under an order issued January 1 consumption of newsprint has been curtailed by 10 per cent. By the system set up publishers are given a proportionate share of the available paper and the manner in which they effect the 10 per cent saving is of their own election.

The belief is general that curtailment in consumption will not stop at 10 per cent; that further restrictions are on the way. By the end of this year the reduction may be as much as 25 to 30 per cent under the 1942 level.

Supply of manpower and pulpwood are major problems for the newsprint mills and they have not been relieved in British Columbia by the current emphasis on sawlog production and the relaxation of log export policy. The Canadian pulpwood cut is estimated at 25 per cent less than a year ago. In the east a considerable amount of the 1941-42 cut has still to come down to the mills because the drive failed to catch the floods, but on the west coast there is no such backlog to be depended on and production has been virtually at a standstill since the first of this year because of adverse weather, the heavy snowfall in the log camps and other factors.

Lieutenant Haggerty In San Francisco

● Lieutenant Luther Haggerty, son of M. L. Haggerty, vice-president of George La Monte and Son, New Jersey, is in San Francisco on special assignment for the Army and Navy Munition Board.

New Federal Forest Fire Law Provides Stiff Penalties

● Approved by the President on December 24, 1942, H.R. 7141 (77th Congress), now Public Law 844, includes "livestock, forage, forest products and standing timber suitable therefor" as "war material" under the Sabotage Act of April 20, 1918. For the duration of the war, "willful injury or destruction" of timber or forest products by incendiarism or trespass is a Federal offense punishable by a fine of not more than \$10,000 or imprisonment for not more than 30 years, or both.

"The importance of wood and other forest products in the war effort is given recognition in this amendment," said acting regional forester H. J. Andrews, U. S. forest service, Portland. "It brings home the seriousness of forest fires in wartime, particularly when caused by incendiarism or willful carelessness. We had an excellent forest fire record last year, thanks to favorable weather and the patriotic response of our citizens. We want to do even better in 1943, and a widespread knowledge of this new wartime federal law will help. And perhaps we can all acquire good habits in wartime that will carry over into the peace."

All law enforcement agencies, it is said, will cooperate in strict enforcement of this law throughout the present war emergency.

Simeral Starts Third Term As Mayor of St. Helens

● R. W. Simeral, vice-president and general manager of the Fir-Tex Insulating Board Company of St. Helens, Ore., began his third successive term the first of the year as Mayor of St. Helens.

Mr. Simeral also was recently appointed a member of the State Board of Education by the Oregon Governor.

A tribute to his public service record, the vote cast for Mr. Simeral in the mayoralty election was more than 1100, highest on the local ballot. He was unopposed. In the primary he was nominated on both tickets by write-ins. He was not a candidate, but he received 163 write-ins on the Republican tickets and 63 on the Democratic.

His term is two years. Next time, he says, someone else will have to be drafted for the job. He has just got to find some way of dodging those write-in votes.

Parkinson Joins Air Corps

● William Parkinson, of the Crown Zellerbach Corp. headquarter's purchasing department, San Francisco, has enlisted in the Army Air Corps Reserves, and left Feb. 10 for Fresno, where he will go into training.

Western Gear Works Wins Army-Navy "E"

For outstanding production of war materials — Presentation made to Seattle plant February 6th.

THE pulp and paper industry of the Pacific Coast can take pride in the award on February 6th of the coveted Army-Navy "E" flag to one of its peace-time suppliers of equipment, the Western Gear Works of Seattle.

Now devoting its greatly expanded production facilities entirely to war equipment the Western Gear Works Seattle plant was awarded the "E" insignia by the Army-Navy Board of Production Awards on the basis of quality and quantity of production in the light of available facilities.

Also considered are: (1) Overcoming of production obstacles. (2) Avoidance of stoppages. (3) Maintenance of fair labor standards. (4) Training of additional labor forces. (5) Effective management. (6) Record on accidents, health, sanitation and plant protection. (7) Utilization of subcontracting facilities. The award is for six months, at the end of which time the plant is reviewed and if a continuation of the honor is justified a star is added to the flag.

"You are good—the Army and the Navy know you are good," said Captain Samuel P. Ginder, commanding officer of the Naval Air Station at Sand Point, Seattle, who presented the flag to Philip L. Bannan, Sr., president of the company, "but never, for one minute, fail to remember our boys out there—they are good, too—they are fighting and dying for a victory."

Mr. Bannan responded with a pledge of the Western Gear Works family of employees to keep on producing for victory. Starting as an apprentice machinist 52 years ago and now head of the Pacific Gear & Tool Works as well as of the Western Gear Works with plants in San Francisco, Seattle and Los Angeles, the senior Bannan gave much credit for the development of the business to Mrs. Bannan and to their sons, Thomas J. Bannan, executive vice-president and general manager of the Western Gear Works; Philip L. Bannan, Jr., manager of the Los Angeles plant; Berk A. Bannan, manager of the Lynnwood California plant, and to Charles F. Bannan, secretary of the Seattle plant.

Receiving the "E" pennant from his father, Thomas J. Bannan spoke of the Western Gear organization as one big family working for victory. The organization is operated, he said, upon that precept of Christianity, "Do unto others as you would have them do unto you."

While all four plants are converted to war work, Mr. Bannan pointed out, the company is not a "war baby." "We hope to return soon to our more peaceful activity of making gears for pulp mills, mines and saw mills. We have plans for after the war," he said.

"But, do you know, it is a fact of which we are proud, that every company in the state which has received the Army-Navy 'E' has been supplied to a greater or lesser extent—and some to a very great extent—with gears made in this plant."

Presenting "E" pins to Dorothy A. Thom, representing the women employees and to Harvey F. Johnson for the men, Brigadier General Eley P. Denson, commanding general at the Seattle Port of Embarkation, remarked, "The kind of a war we are fighting today cannot be won on the battlefield alone. In a machine-age war it takes the utmost effort of the men and women who build machines, as well as that of soldiers and sailors who man the guns and ships and planes. This pin is your assurance that the Army and Navy feel they can depend on you, that you will remain steadfast and loyal, and will continue in the future, as you have in the past, to keep the faith."

Harvey F. Johnson, responding for the men, said in part: "I'm extremely proud to have been chosen to represent the finest group of men that ever worked for any employer. And I pledge them all to do better than their best to win an additional star every six months."

"You can be sure," he said to General Denson, "that the boys over here will do their best for the boys over there."

D. K. MacDonald, president of the Seattle Chamber of Commerce, acted as master of ceremonies and read a congratulatory message from Governor Arthur B. Langlie. Mayor W. F. Devin extended the city's congratulations of the fine production record of the Western Gear Works. Captain Joseph T. Casey, chaplain of the 13th Naval District, delivered the invocation. The 212th Coast Artillery band supplied the music.

The entire program was broadcast over the Pacific Blue Network and heard by the employees of the company's plants in California, and rebroadcast later in the day over other Pacific Coast stations.



WESTERN GEAR WORKS receives the Army-Navy "E" for excellence in war production. Left to right, Captain SAMUEL P. GINDER, Commanding Officer, Naval Air Station, Sand Point and Air Control Center, Seattle; THOMAS J. BANNAN, Executive Vice President and General Manager and PHILIP L. BANNAN, Sr., President, Western Gear Works; and, Brigadier General ELEY P. DENSON, Commanding General, Seattle Port of Embarkation.



HARVEY F. JOHNSON, who acknowledged the "E" award for the men employees and DOROTHY A. THOM who responded for the women. General DENSON speaking.



CHARLES F. BANNAN, Secretary, Western Gear Works, Seattle; D. K. MacDonald, President Seattle Chamber of Commerce (standing); General DENSON; Captain GINDER; PHILIP L. BANNAN, Sr., and HARVEY F. JOHNSON, assuring the Army and Navy that the employees will "do better than their best."

Post War Reconstruction Of British Paper Making

by A PAPER MILL MANAGING DIRECTOR

BRITISH paper makers have so far been so busy with Wartime problems and difficulties that they have not found time for consideration of post-war problems. It is about time, however, that some serious thought should be given to this subject. If we do not plan now and have some definite aims formulated for the future, our wartime difficulties may fade into insignificance compared with the troubles that peace may bring to our industry. Let us face the facts.

Paper manufacture has never been recognized as a very important industry in this country partly because its capital value is smaller than many of our larger industries, but chiefly because there has been no corporate advertisement of the importance of British paper making. The history of British paper making is known only to those engaged in the industry and neither the general public nor the Government appear to know that during the past century the remarkable developments of the pulp and paper industry throughout the world have been inspired by British paper makers and their engineers. During the past century the value of British paper making cannot be measured by the value of its exports, but by its influence on world-wide civilization—from the building of the first paper machine and the first rotary press in this country.

In wartime the Government has been compelled to give a somewhat tardy and qualified recognition to paper making as an essential industry hedged around by many restrictions. If this attitude to papermaking continues after the war, there is not the slightest doubt that the industry will receive a very serious setback with equally serious repercussions on the printing, publishing and converting industries which depend upon paper as a raw material.

Today many paper makers are looking forward to the post-war period. They imagine that things will be very much like what took place after the last war, with a few minor alterations in internal organization, but with the experience that will safeguard them from the mistakes of past years, they are looking forward to casting aside such Wartime materials as straw and waste-paper and resuming purchases of esparto and wood pulp from pre-war sources. Such will have a rude awakening and to nurse such ideas will bring disaster to the industry.

There is not the slightest doubt that the successful continuation of paper making as a British industry after the war will depend upon the surmounting of difficulties which will call for the maximum effort, not only in economic planning but in the application of the highest technical skill.

Raw Materials

● In the past British paper makers have imported the bulk of their raw materials, including rags, esparto and wood pulp. Our ability to purchase these materials after the war will be limited by necessities and political considerations.

In Great Britain, as in the United States, there is much discussion of post war conditions and methods of controlling them.

The paper and board industry of Britain is thinking about post war raw material supplies and markets, both domestic and export. In this article, which is reprinted from the October 9, 1942 issue of "The World's Paper Trade Review," a managing director defines what he believes to be the industry's post war problems, and then outlines a plan for meeting them. His ideas have provoked much discussion in the British industry.

His ideas and suggestions will be interesting to American producers of pulp, paper and paper-board.

Timber, as the principal raw material, will be required by all the European countries in enormous quantities for reconstruction of ships and buildings for many years to come. A common-sense point of view of this situation indicates that the Central European countries will absorb practically all the timber available from Sweden and Finland. Imported timber will be required also in enormous quantities for reconstruction in

Great Britain. On the other hand, increasing quantities of wood pulp will be required for the manufacture of textiles such as artificial silk and wool. We will be compelled to look to America and Canada for pulp supplies and prices will be high.

Under such conditions it appears to the writer doubtful if newsprint manufacture can possibly regain its former status, because it will be cheaper to import newsprint from Canada, and the large newspaper proprietors may be expected to look after their own interests in this matter, just as they have done during the War. The future of kraft and sulphite wrapping papers in this country appears equally dark. In fact it appears difficult to conceive how any British mill depending upon imported pulp in the future will be able to continue without high tariff walls, and it would appear that the latter are not consistent with the new order of the democratic world as visualized by our economists.

The esparto mills have higher hopes of regaining their former raw material; but if they do it will be at a very much higher cost. The Mediterranean countries, including Italy, France and Spain, will undoubtedly consume much larger quantities of this material in the future, and the Arab producers will be more enlightened.

It appears clear, quite apart from the promised continuance of Control in our industry after the War, that for a very long time we will be compelled to depend largely upon home-produced materials as a source of pulp for paper making, i.e., on straw and waste materials.

It also appears clear that the mills which have in the past run very largely on waste materials will survive Wartime difficulties most successfully and will continue on similar lines in the future. These include, strange to say, the two extremes of paper making, viz., mills making high-grade specialty papers from rags and hemp and low-grade papers such as boards and cheap wrappings from waste paper. The great back-bone of British paper making has only two assets, viz., china clay and brains, and our future depends on both.



Export

● Our ability to purchase even limited quantities of wood pulp will depend largely upon the value of our exports. Unfortunately paper is a product in which the raw material figures as a very high percentage of the total cost, in the past the finished paper being no more than three times the value of the pulp used. During the past twenty-five years we have seen one export market after another slipping from our grasp as various markets became either self-supporting in home-made paper or absorbed by foreign competition. Japan was the first to go, followed very largely by India. Now Australia and South America are going. British engineers have orders on their books for post-War delivery of over fifty paper machines. We can only hope to regain our position in paper exports by the manufacture of high quality papers having a relatively high value as compared with the raw material. This is not impossible of accomplishment, but it will require the application of scientific method. In this matter our only hope is to follow the example of the textile industries. At one time the future looked very dark for the cotton and woolen industries. Today, even under the clouds of War, the future looks bright for the textile industries, thanks to their bold policy of placing themselves in the hands of skilled technical advisers and their investment of a very moderate sum of money in co-operative research schemes.

In the near future every civilized country in the world will be producing their ordinary requirements in cheap papers which do not require a very high degree of skill in their production. Our future in the export markets of the world depends upon the production of high-grade specialty papers carrying a high price and in books, stationery and other products of paper conversion.

Planning for the Future

● A representative committee should be set up immediately by the Paper Makers Association to consider the future of the industry and to plan for the future. Essential points for consideration should include the following:

1. Removal of the Ministry of Supply control of paper within six months of the termination of the War.
2. Collective direct buying of all imported raw materials for British mills.
3. Co-operative control of all selling prices for standard grades of paper subject to penalties.
4. Standardization of quality, shades, sizes and substances with the object of keeping every paper machine in Great Britain running full deckle without changes throughout the week.
5. Agreement not to install new paper-producing machines in Great Britain, except for the replacement of out-of-date machines, shut down, or to meet a proved demand for new production.
6. Agreement prohibiting the sale or export of existing machines when replaced by new machines.
7. Immediate establishment of a Research Association for paper manufacture.
8. Grant to universities covering cost of post-graduate research in fundamental problems of paper chemistry and physics.
9. Comprehensive scheme for education of paper mill workers.
10. Agreement with paper merchants handling only British-made papers; such merchants to participate in formulating

and supporting items 3, 4, 7 and 8.

11. Co-operative publicity for the industry.

Conclusion

● It must be remembered that the future of the paper-making industry must not be left at the disposal of politicians or civil servants. There is a great risk that in the consideration given to the so-called primary industries such as agriculture, food production, mining and engineering, a minor but very essential industry such as paper making may be sadly neglected. If we as an industry lay ourselves out to give the paper mill worker a square deal, we are entitled to the maximum support of workers in the so-called primary industries. Paper mills Indiana.

are good customers to both the engineering and the coal mining industries. Too much stress cannot be laid on the necessity for educating the public in accomplishments of British paper making and our contribution to the War effort. A co-operative effort should be made at once to give paper making the maximum degree of publicity. In this matter we cannot depend upon the daily newspapers, as they are obviously interested in cheap paper of any source of origin.


Mrs. Monson

Taking Vacation

● Mrs. Roberta Monson, in charge of personnel, Crown Zellerbach Corp., San Francisco, is spending a fortnight's vacation at the home of her parents in

FIELD NOTES

How to lubricate hose to attach tight fitting couplings



Take it easy! Here's what NOT to do!

DON'T use oil or grease for fitting the couplings.

DON'T ream out the hose tube.

To lubricate couplings that fit tightly, DO use Rubber Cement which can be obtained in tubes and other containers from auto supply houses. Cementing the coupling shank will help it slide on the hose easily and help set it in place.

RUBBER HELPS WIN

Every person within industry can help the all-out war effort by making present materials last longer. This is keenly true with reference to industrial rubber belting and hose. It is our mutual obligation to take immediate steps to assure the last bit of long life from every piece of rubber in use today.

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PIONEER

Job Tailored

INDUSTRIAL HOSE

North American News Production Down 7.9%

● Production in Canada during December, 1942, amounted to 244,191 tons and shipments to 243,530 tons, according to the News Print Service Bureau. Production in the United States was 74,655 tons and shipments 75,222 tons, making a total United States and Canadian news print production of 318,846 tons and shipments of 318,752 tons. During December, 19,436 tons of newsprint were made in Newfoundland, so that the North American production for the month amounted to 338,282 tons. Total production in December, 1941, was 406,953 tons.

The North American output of newsprint paper in 1942 was 4,407,144 tons, of which 3,177,102 tons was made in

Canada, 952,616 tons in the United States, and 277,426 tons in Newfoundland. The Canadian output was 7.3 per cent less than in 1941, that in the United States 6.1 per cent less, with a loss of 19.5 per cent in Newfoundland, making a continental decrease of 378,433 tons or 7.9 per cent.

Stocks of newsprint paper at the end of December were 91,986 tons at Canadian mills and 9,601 tons at United States mills, making a combined total of 101,587 tons compared with 101,493 tons on November 30, 1942, and 131,157 tons at the end of December, 1941.

Cameron Offers Roll Length Calculator

● A handy roll length calculator has been developed by the Cameron Machine

WANTED

SULPHITE SUPERINTENDENT FOR MILL IN CENTRAL CANADIAN CITY MANUFACTURING NEWS-PRINT AND EXPORT SULPHITE. PERMANENT POSITION. APPLY STATING EXPERIENCE AND SALARY EXPECTED. Reply, Box 15, Pacific Pulp & Paper Industry, 71 Columbia St., Seattle, Wash

Company of Brooklyn, New York, to enable paper mill superintendents, also operators of slitting and roll winding machines as well as web fed processing machines, to determine promptly the number of feet of paper or paper board in a roll, when the diameter of the roll is known and the thickness or caliper of the web is checked in thousandths of an inch.

The calculator is arranged to enable determination of the length of paper in rolls of any diameter up to 17 inches when the caliper of the paper is one half thousandth of an inch. As the caliper of the web increases the scale permits determination of the length of paper in rolls of gradually increasing diameter. For instance, at five thousandths caliper, roll length can be determined for any diameter roll from one to fifty-five inches, while at fifty thousandths caliper roll length can be determined for any diameter roll up to seventy-two inches.

This attractive and durable calculator will be furnished gratis to any one in the industry, writing to Cameron Machine Company, 61 Poplar Street, Brooklyn, N. Y., on their regular company letterhead.

Shartle Issues New Pump Bulletin

● Available to mill operators is a new four-page folder covering the line of Miami Class DV centrifugal pumps for paper mill service, issued by Shartle Bros. Machine Co., Middletown, Ohio, Division of the Black-Clawson Company.

This class is built in sizes from 4-inch to 12-inch discharge, and capacities from 450 GPM to 4800 GPM, and will handle stock up to 6 per cent consistency.

The pump provides a most compact vertical arrangement that can be adapted to most mill layouts. No other vertical stock pump offers so many advantages as does the Miami DV design," states bulletin No. 78-S.

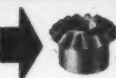
"Suction is at top of impeller which means that any stock from 1 per cent to 6 per cent consistency flows right to the eye of the impeller. This is in direct contrast to bottom suction pumps with their consistency limit of about 3 per cent. The Miami DV is self draining, empties itself of the last cup full of stock. This is in contrast with bottom suction pumps where complete elimination is impossible. You get complete washup with less water."

Carl Ramstads Have A Baby Girl

● Arriving as a Christmas present at the Carl Ramstad home in Everett was Catherine Antoinette. Mr. Ramstad, instrument man for the Soundview Pulp Company, reported that both mother and daughter were doing fine and that the young lady was warmly welcomed by her two-year-old brother, David.



ACTUAL SIZE



HERE are two extremes—above we are cutting a 12-foot diameter ring gear and at right is a photo of a little bevel gear 1/4-inch in diameter. Each of these gears has accurately generated teeth, precise to tolerance of but a few thousandths of an inch. Each can be produced by us in quantity. Work of such range in size, requires gear cutting machinery of many types and capacities. In four associated plants on the Pacific Coast we have equipment to meet almost any demand. If your work is essential to the war—and needs gears—any size gears—see us.

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PACIFIC GEAR WORKS—Los Angeles, Calif.
WESTERN GEAR WORKS—Lynwood, California



Expect No More Cuts In British Newspapers

● British newspapers will be able to maintain publication without loss of circulation and without further reduction in the number of their pages under the terms of an agreement reached between the government and Newsprint Supply Company, according to a London dispatch to Montreal Gazette.

Under the terms of the agreement current stocks will be reduced to 16 weeks' supply between now and June 30. The Government has advised newspaper proprietors that by that date all stocks should be in standard weight and standard interchangeable sizes. Proprietors are asked to use up any old stocks in their possession with a view to clearing out all stocks of non-standard size or paper or stocks held in vulnerable areas or in unsuitable storage places.

Many newspaper firms at present hold odds and ends of outsized papers amounting to several thousand tons which will be put in current use as soon as possible.

A special committee has been established to advise newspapers throughout the country on the best ways of using and conserving their stocks.

The Newsprint Supply Company was formed in May, 1940, to deal with the emergency situation arising from the German invasion of Norway, Britain's principal source of supply for newsprint. Reserves of newsprint on hand at that time amounted to 200,000 tons. The weekly consumption was then 14,500 tons as compared with the pre-war figure of 25,000. Accordingly consumption of newsprint was drastically reduced beginning July 1, 1940, and from then onward very close supervision was exercised, with the result that reserves were actually increased because consumption was cut so heavily.

Between September 3, 1939, and June 30, 1940, restrictions amounted to 60 per cent of pre-war consumption. The 14,500-ton figure of weekly consumption was further reduced to 6,800 tons between July 1, 1940, and March 15, 1941, as the result of pegged circulation and a government order limiting the number of pages newspapers could print.

Between April 13, 1941, and March 16, 1942, the weekly consumption dropped to 4,850 tons. From March 16 last year, up to the present time the weekly consumption averaged 4,430 tons.

Since the Newsprint Supply Company came into being Canadian newsprint has been imported at approximately £3 per ton less than the price of the domestic product.

WPB Offices Given Emergency Repair Authority

● Increasing decentralization of the War Production Board, with ensuing benefits to western industry, was indicated early in January in the granting of authority for approval of individual emergency preference ratings to the regional field offices of WPB.

As announced in San Francisco by Harry H. Fair, regional director of WPB, regional directors of the board are now authorized to approve, countersign and issue individual preference ratings for emergency repairs, up to and including AA-1.

This is in accordance with specific instructions to be issued from time to time by the WPB deputy director general for distribution. Under this ruling, regional deputy directors of the WPB may also be authorized to perform these functions.

In addition, the 110 national district offices of WPB may for the first time grant ratings for emergency repair up to and including AA-2X. The authority delegated in this instance is limited to cases where the materials for which the applicant seeks priority assistance does not exceed \$500 in value.

These two steps will give Pacific Coast regional and district WPB offices expanded scope of authority in rendering assistance to emergency situations in war plants and essential civilian industry, Fair said.

Bob Williams With War Manpower Commission

● R. H. "Bob" Williams, one of Otto Hartwig's assistants in safety and accident prevention work for the Crown Zellerbach Corporation and Rayonier Incorporated, has been given leave for duration of the war to serve the War Manpower Commission. Williams is joining the training-within-industry staff of the Commission as a training specialist. His headquarters will be in Seattle and his territory will be Washington and Montana. Williams moved from Portland to Seattle to take over his new duties December 1.

Engstrom Elected Austin Vice President

● Wallace R. Engstrom of Seattle was elected a vice president of The Austin Company, it was announced January 17th by George A. Bryant, president and general manager in Cleveland.

Mr. Engstrom, who is well known in the Pacific Northwest pulp and paper industry, was born in Perrebonne, Minnesota, and is a graduate in civil engineering from the University of Washington. A private in the United States Army in World War I, Mr. Engstrom joined the Austin organization as a field engineer in 1923 in the Seattle territory. He became assistant to the Austin district manager in Seattle in 1929, and district manager in 1933.

In mid-1940, Mr. Engstrom was given the additional responsibilities of general project manager of the U. S. Naval Air Station and Naval Supply Depot, Seattle, and related navy construction work in the Pacific Northwest where the Austin Company, since the outbreak of the war

in Europe, has undertaken the design and construction of more than \$100,000,000 worth of war facilities of all types.

Mr. Engstrom is a member of Tau Beta Pi, national honorary engineering society. He is also a member of the Rainier Club of Seattle and of the Seattle Chamber of Commerce. He is a member of the American Society of Civil Engineers and a past president of the Seattle Section of the Society.

Fibreboard Holds Regular Sales Meeting

● Problems of wartime production and sales were discussed at a joint meeting of plant managers and sales executives of Fibreboard Products, Inc., held in San Francisco in January.

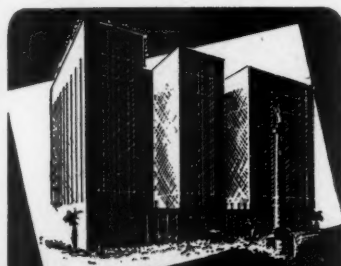
About 25 executives were present, and sessions of the respective groups were presided over by N. M. Brisbois, vice-president in charge of all plant operations, and E. J. Farina, vice-president in charge of sales.

The meeting ended on a tragic note when C. S. Rutherford, Eastern sales representative, was stricken with a heart attack and died suddenly on the train en route to his home in Philadelphia.

Morseth Injured While Skiing

● Gordon Morseth, digester foreman, Puget Sound Pulp & Timber Co., tried out his skis during the heavy snow in January, ran one ski under a tree root, broke a bone in his foot, and tore a ligament.

As a result he will be doing his work with the help of crutches for about six weeks.



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1. KEEP CLEAN. After each wash, rinse the tub thoroughly. Drain hose into a container to protect rubber. Avoid kinks in the hose.

2. PROTECT WRINGER. Relieve pressure on the wringer rolls when not in use. Wipe wringer rolls dry after using.

3. DON'T OVERLOAD. Never jam too many clothes into the machine at one time. An overloaded tub is hard on clothes and a strain on the mechanism.

Make sure your **ELECTRICAL SERVANTS** Stay ON THE JOB for the "Duration."



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Which One Is Best For You

A SHEAR CUT OR A SCORE CUT SLITTER?

Let Cameron answer that problem for you. Because we make both shear cut and score cut slitting machines, Cameron engineers can help you

to make an unbiased selection. At the same time we can recommend the correct winding method for your job. Write for interesting literature.

SCORE CUT

SHEAR CUT

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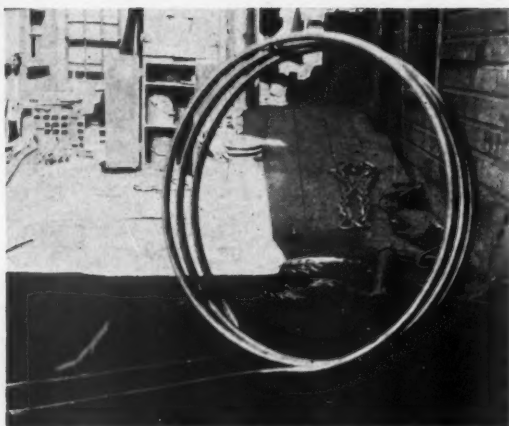
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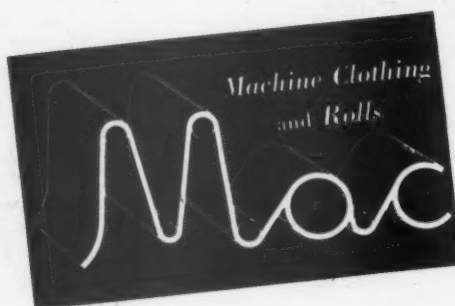
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